

PROJECT MANUAL

Bid Documents and Specifications

June 2019

City of Garden City



G A R D E N C I T Y

City Hall Rooftop Unit Replacement



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Garden City - City Hall Rooftop Unit Replacement

00 01 15

LIST OF DRAWINGS

PART 1 GENERAL

1.1 CONTRACT DRAWINGS

Contract drawings are as follows:

DRAWING NO. GENERAL	TITLE	SHEET NAME	DATE
1	TITLE SHEET	T0.1	06/05/2019
ELECTRICAL			
2	LEGEND, GEN. & DEM. NOTES, ELECTRICAL SPECS AND PART. ONE-LINE DIAGS.	E0.1	06/05/2019
3	FLOOR PLAN - ELECTRICAL	E1.1	06/05/2019
MECHANICAL			
4	LEGEND, ABBREVIATIONS AND SCHEDULES - HVAC	M0.1	06/05/2019
5	FLOOR PLAN - HVAC	M1.1	06/05/2019

PART 2 PRODUCTS

Not Applicable

PART 3 EXECUTION

Not Applicable

-- End of Document --

00 01 20

ADVERTISEMENT FOR BIDS

PART 1 GENERAL

**City of Garden City
100 Central Avenue
Garden City, Georgia 31405**

CITY HALL ROOFTOP UNIT REPLACEMENT

Sealed Bids will be received by the City of Garden City for City Hall Rooftop Unit Replacement to consist of replacing rooftop unit RTU-2 in the City Hall building.

The Work includes removing existing unit, providing and installing new unit in same location, disconnect electrical and controls and reconnect to new unit. Controls shall be i-Vu already in building.

Separate sealed bids for construction of the City Hall Rooftop Unit Replacement will be received by City of Garden City (also referred to as Owner) from qualified General Contractors to include all associated work labor and materials, equipment and appurtenances required to complete the Work as described herein.

Bids will be received at the City of Garden City, 100 Central Avenue, Garden City, Georgia 31405, by 5:00 p.m. legal local time, August 2, 2019. Bids submitted by mail or courier are required to be delivered before the Bid Opening time stated above and should be addressed to: City of Garden City, 100 Central Avenue, Garden City, Georgia 31405, Attention: Ronald Feldner, City Manager.

A non-mandatory pre-bid meeting will be held at Garden City, City Hall, Conference Room, located at 100 Central Avenue, Garden City, Georgia 31405, at 9:00 a.m. July 19, 2019. This pre-bid meeting will include a visit to the project site. Prospective bidders are encouraged to attend the pre-bid meeting.

No bid may be modified, withdrawn, or canceled for a period of sixty (60) days after time designated for receipt of Bids, or until notified by Owner, whichever is sooner.

Bids must be accompanied by a certified check or Bid Bond in the amount of five percent of the bid amount. The successful bidder must be able to provide a Payment Bond and Performance Bond within ten days of Notice of Award. These bonds must be in the amount of 100 percent of the contract amount.

A non-collusion affidavit must be completed and submitted as part of the Contractor's bid.

The City of Garden City reserves the right to reject any and all bids and to waive irregularities, technicalities, and informalities.

Garden City - City Hall Rooftop Unit Replacement

The Contract Documents may be downloaded from the City of Garden City web site at www.gardencity-ga.gov/bids.

PART 2 PRODUCTS

Not Applicable

PART 3 EXECUTION

Not Applicable

-- End of Document --

00 01 30

INSTRUCTIONS TO BIDDERS

PART 1 GENERAL

1.1 DEFINED TERMS

Terms used in these Instructions to Bidders which are defined in the Standard General Conditions of the Construction Contract have the meanings assigned to them in the General Conditions.

Certain additional terms used in these Instructions to Bidders have the meanings indicated below which are applicable to both the singular and plural thereof.

- a. Bidder: One who submits a Bid directly to Owner as distinct from a sub-bidder, who submits a bid to a Bidder.
- b. Issuing Office: The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.
- c. Successful Bidder: The lowest, responsible and responsive Bidder to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award.

1.2 COPIES OF BIDDING DOCUMENTS

- a. Complete sets of the Bidding Documents may be obtained from Dodge Data and Analytics Clayton Digital Reprographics, 1101 Chatham Parkway, Suite 2A Savannah GA 31408
- b. Complete sets of Bidding Documents must be used in preparing Bids; neither Owner nor Engineer assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents, whether obtained from the Owner, Engineer, Issuing Office, or other sources.
- c. Owner and Engineer in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids for the Work and do not confer a license or grant for any other use.

1.3 EXAMINATION OF CONTRACT DOCUMENTS

- a. It is the responsibility of each Bidder before submitting a Bid:
 - 1. To examine thoroughly the Contract Documents and other related data identified in the Bidding Documents including "technical data" referred to below;
 - 2. To consider federal, state and local Laws and Regulations that may affect cost, progress, performance or furnishing of the Work;

3. To study and carefully correlate Bidder's knowledge and observations with the Contract Documents and such other related data; and
 4. To promptly notify Engineer of all conflicts, errors, ambiguities or discrepancies which Bidder has discovered in or between the Contract Documents and such other related documents.
- b. On request, Owner will provide each Bidder access to the site to conduct such examinations, investigations, explorations, tests and studies as each Bidder deems necessary for submission of a Bid.
 - c. The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Paragraph "EXAMINATION OF CONTRACT DOCUMENTS", that without exception the Bid is premised upon performing and furnishing the Work required by the Contract Documents and applying the specific means, methods, techniques, sequences or procedures of construction (if any) that may be shown or indicated or expressly required by the Contract Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities and discrepancies that Bidder has discovered in the Contract Documents and the written resolutions thereof by Engineer is acceptable to Bidder, and that the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

1.4 INTERPRETATIONS AND ADDENDA

- a. All questions about the meaning or intent of the Bidding Documents are to be directed to Engineer. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by the Engineer as having received the Bidding Documents. Questions received less than five days prior to the date for opening of Bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- b. Addenda may also be issued to modify the Bidding Documents as deemed advisable by Owner or Engineer.
- c. Failure of any Bidder to receive any such addendum or interpretations shall not relieve such bidder from any obligations under his Bid as submitted.
- d. Failure of any Bidder to acknowledge any such addendum or interpretations shall not relieve such Bidder from any obligation under his Bid as submitted, if Bidder has knowledge of any such addendum, or interpretations. If Bidder has knowledge of any such addendum or interpretation but fails to acknowledge, this will be considered a formality.

1.5 BID SECURITY

- a. Each Bid must be accompanied by a Bid Bond on the form attached with good and sufficient surety or sureties approved by the owner and

meeting the requirements of Paragraph "Performance, Payment, and Other Bonds" of the General Conditions, for faithful acceptance of the contract, payable to, in favor of, and for the protection of the OWNER in an amount equivalent to five percent of the total amount payable by the terms of the contract, in lieu thereof, in the form of a certified check, cashier's check, or cash in equal amount. Bidders who submit Bid Security in the form of a certified check, cashier's check, or cash are bound by the "Terms of Bid Bond" as if submitted on the attached "Bid Bond" form.

- b. The Bid security of Successful Bidder will be retained until such Bidder has executed the Agreement, furnished the required contract security and Certifications of Insurance and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Agreement and furnish the required contract security within ten days after the Notice of Award, Owner may annul the Notice of Award and Bid security of that Bidder will be forfeited. The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of the seventh day after the Effective Date of the Agreement or the 66th day after the Bid opening whereupon Bid security furnished by such Bidders will be returned. Bid security with Bids which are not competitive will be returned within seven days after the Bid opening, if requested by the Respective Bidder.

1.6 CONTRACT TIMES

The number of days within which, or the dates by which, the Work is to be substantially completed and also completed and ready for final payment are set forth in the Agreement and incorporated therein by reference in the attached Bid Form.

1.7 LIQUIDATED DAMAGES

Provisions for liquidated damages are set forth in the Agreement.

1.8 SUBSTITUTE AND "OR-EQUAL" ITEMS

The Contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or-equal" items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "or-equal" item of material or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Agreement. The procedure for submission of any such application by Contractor and consideration by Engineer is set forth in Paragraph "Substitutes and "Or Equals"" of the General Conditions and may be supplemented in the General Requirements.

1.9 SUBCONTRACTORS, SUPPLIERS AND OTHERS

- a. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers and other persons and organizations (including those who are to furnish the principal items of material and equipment) to be submitted to Owner in advance of a specified date

prior to the Effective Date of the Agreement, apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening submit to Owner a list of all such Subcontractors, Suppliers and other persons and organizations proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, person or organization if requested by Owner. An Owner or Engineer who after due investigation has reasonable objection to any proposed Subcontractor, Supplier, other person or organization, may before the Notice of Award is given request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall submit an acceptable substitute, that Bidder's price will be increased (or decreased) by the difference in cost occasioned by such substitution and Owner may consider such price adjustment in evaluating Bids and making the contract award.

- b. If apparent Successful Bidder declines to make any such substitution, Owner may award the contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers and other persons and organizations. The declining to make requested substitutions will not constitute grounds for sacrificing the Bid security of any Bidder. Any Subcontractor, Supplier, other person or organization listed and to whom Owner or Engineer does not make written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Paragraph "Concerning Subcontractors, Suppliers, and Others" of the General Conditions.

1.10 BID FORM

- a. The Bid Form is included with the Bidding Documents; additional copies may be obtained from the issuing Office.
- b. All blanks on the Bid Form must be completed by printing in ink or by typewriter.
- c. Bids by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation must be shown below the signature.
- d. Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature and the official address of the partnership must be shown below the signature.
- e. All names must be typed or printed in ink below the signature.
- f. The Bid shall contain an acknowledgement of receipt of all Addenda (the numbers of which must be filled in on the Bid Form).
- g. The address and telephone number for communications regarding the Bid must be shown.

- h. Evidence of authority to conduct business as an out-of-state corporation in the state where the Work is to be performed shall be provided in accordance with Paragraph "QUALIFICATIONS OF BIDDERS" of these Instructions To Bidders. State contractor license number must also be shown.
- i. Each bid must be submitted in a sealed envelope bearing on the outside the name of the bidder, his address, and the name of the project for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed as specified in the bid form. Any bid which is not properly prepared and accompanied by required certifications and affidavits may be rejected by the Owner.

1.11 SUBMISSION OF BIDS

Bids shall be submitted at the time and place indicated in the Advertisement or Invitation to Bid and shall be enclosed in an opaque sealed envelope, marked with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, state contractor license number (if applicable) and accompanied by the Bid security, entire bidding documents, except drawings, and other required documents. If the Bid is sent through the mail or other delivery system the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face of it.

1.12 MODIFICATION OF BIDS

- a. Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the receiving time.

1.13 OPENING OF BIDS

Bids will be opened and (unless obviously non-responsive) read aloud publicly at the place where Bids are to be submitted. An abstract of the amounts of the base Bids and major alternates (if any) will be made available to Bidders after the effective date of the Contract.

- a. The Owner is not obligated to consider a Bidder's proposal, if Bidder is not on record with the Issuing Office as having received complete Bidding Documents from the Issuing Office.
- b. No bid shall be considered unless a proper bid bond or other security authorized in Paragraph "BID SECURITY" of these Instructions To Bidders is submitted.

1.14 BIDS TO REMAIN SUBJECT TO ACCEPTANCE

All Bids will remain subject to acceptance for sixty days after the day of the Bid opening, but Owner may, in its sole discretion, release the Bid and return the Bid security prior to that date.

1.15 AWARD OF CONTRACT

- a. Owner reserves the right to reject any or all Bids, including without limitation the rights to reject any or all nonconforming, nonresponsive, unbalanced or conditional Bids and to reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder, whether because the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by Owner. Owner also reserves the right to waive all informalities not involving price, time or changes in the Work and to negotiate contract terms with the successful Bidder. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.
- b. In evaluating Bids, Owner will consider the qualifications of Bidders, whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award. Conditional Bids will not be accepted.
- c. Owner may consider the qualifications and experience of Subcontractors, Suppliers, and other persons and organizations proposed for those portions of the Work as to which the identity of Subcontractors, Suppliers, and other persons and organizations must be submitted as provided in the Supplementary Conditions. Owner also may consider the operating costs, maintenance requirements, performance data and guarantees of major items of materials and equipment proposed for incorporation in the Work when such data is required to be submitted prior to the Notice of Award.
- d. Owner may conduct such investigations as Owner deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of Bidders, proposed Subcontractors, Suppliers and other persons and organizations to perform and furnish the Work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.
- e. Owner intends to award the Work to one contractor. The Owner reserves the right to reduce the project unit quantities and scope of work in order to reduce the contract amount to the available budget established by the City for the project.
- f. If the contract is to be awarded, it will be awarded to lowest Bidder whose evaluation by Owner indicates to Owner that the award will be in the best interests of the Project. No portion of the project will be awarded to separate bidders.
- g. If the contract is to be awarded, Owner will give Successful Bidder a Notice of Award within 65 days after the day of the Bid opening.

1.16 CONTRACT SECURITY

The General Conditions and the Supplementary Conditions set forth Owner's requirements as to Performance and Payment Bonds. When the Successful Bidder delivers the executed Agreement to Owner, it must be accompanied by

the required Performance and Payment Bonds on the forms included in the Contract Documents.

1.17 SIGNING OF AGREEMENT

When Owner gives a Notice of Award to the Successful Bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement with all other written Contract Documents attached. Within ten days thereafter Contractor shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner with the required Bonds and Certification of Insurance. Within ten days thereafter Owner shall deliver one fully signed counterpart to Contractor. Each counterpart is to be accompanied by a complete set of the Drawings and applicable documents with appropriate identification.

1.18 LAWS AND REGULATIONS

All applicable federal and state laws, municipal ordinances, and rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.

PART 2 PRODUCTS

Not Applicable

PART 3 EXECUTION

Not Applicable

-- End of Document --

Garden City - City Hall Rooftop Unit Replacement

00 41 13

BID FORM

PART 1 GENERAL

1.1 PROJECT IDENTIFICATION

City Hall Rooftop Unit Replacement

1.2 THIS BID IS SUBMITTED TO:

**City of Garden City
100 Central Avenue
Garden City, Georgia 31405**

- a. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an Agreement with OWNER in the form included in the Contract Documents to furnish all necessary products, machinery, tools, apparatus, means of transportation and labor necessary to complete the construction of the Work in full and complete accordance with the reasonably intended requirements of the Contract Documents to the full and entire satisfaction of the Owner with a definite understanding that no money will be allowed for extra work except as set forth in the Contract Documents, for the following Unit Prices and Bid Amount:

Unit Price Bid:

Item No.	Description	Unit	Est. Qty.	Unit Price	Amount
1	Mechanical - Div 23	LS	1	\$ _____ Dollars & Cents	\$ _____ Amount
2	Electrical - Div 26	LS	1	\$ _____ Dollars & Cents	\$ _____ Amount

Unit Price Bid, Item No. 1 through 2.

Total Amount: _____

(words and figures) (\$ _____)

- b. BIDDER accepts all of the terms and conditions of the Advertisement for Bidders and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain

subject to acceptance for sixty days after the day of Bid opening. BIDDER will sign and deliver the required number of counterparts of the Agreement with the Bonds, Certifications of Insurance, and other documents required by the Bidding Requirements within ten days after the date of OWNER's Notice of Award.

- c. In submitting the Bid, BIDDER represents, as more fully set forth in the Agreement, that:

1. BIDDER has examined and carefully studied the Bidding Documents and the following Addenda, receipt of all which is hereby acknowledged: (List Addenda by Addendum Number and Date)

2. BIDDER declares an understanding that the quantities shown for unit price items are subject to either increase or decrease, and that should the quantities of any of the items of Work be increased, the BIDDER proposes to do the additional Work at the unit prices stated herein; and should the quantities be decreased, the BIDDER also understands that payment will be made on the basis of actual quantities at the unit price bid and will make no claim for additional costs or anticipated profits for any decrease in quantities; and that actual quantities will be determined upon completion of Work, at which time adjustment will be made to the Contract amount by direct increase or decrease;
3. In case of discrepancies between the figures shown in the unit prices and the totals, the unit prices shall apply and the totals shall be corrected to agree with the unit prices. In case of discrepancies between written amounts and figures, written amounts shall take precedence over figures and the sum of all Bid extensions (of unit prices) plus lump sum items shall take precedence over BID TOTAL;
4. BIDDER has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance and furnishing of the Work;
5. BIDDER is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.
6. BIDDER has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the Work or which relates to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed

by BIDDER and safety precautions and programs incident thereto. BIDDER does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the determination of this Bid for performance and furnishing of the Work in accordance with the times, price and other terms and conditions of the Contract Documents.

7. BIDDER is aware of the general nature of Work to be performed by Owner and others at the site that relates to Work for which this Bid is submitted as indicated in the Contract Documents.
 8. BIDDER has correlated the information known to BIDDER, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.
 9. BIDDER has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies that BIDDER has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to BIDDER, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted.
 10. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other Bidder or over OWNER.
- d. BIDDER agrees that the Work will be substantially complete within ____ days after the date when the Contract Times commences to run as provided in the General Conditions, and completed and ready for final payment in accordance with the General Conditions within ____ days after the date when the Contract Times commences.
 - e. BIDDER will complete the Work in accordance with the Contract Documents and in accordance with the scheduled times shown in paragraph d. of this Bid Form.
 - f. BIDDER accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the time(s) specified in the Agreement.
 - g. The following documents are attached to this Bid:
 1. Required Bid Security in the form of Bid Bond, Certified Check, Cashier's Check, or Cash. Bidders who submit Bid Security in the form of a Certified check, Cashier's Check, or Cash are bound by the "Terms of Bid Bond" as if submitted on the attached "Bid Bond" form.
 2. Noncollusion Affidavit.
 3. Statement of Bidder's Qualifications.

Garden City - City Hall Rooftop Unit Replacement

- j. Communications concerning this Bid shall be addressed to:
S. Michelle Peavler, P.E.
Chatham Engineering, LLC
109 Park of Commerce Dr., Suite 6
Savannah, Georgia 31405
Phone: (912)238-2400
Fax: (912)238-2412

The address of BIDDER indicated below.

BIDDER'S NAME _____
Primary Contact Person _____
Secondary Contact Person _____
Bidder's Street Address _____

Bidder's Mailing Address _____
(if different) _____
Bidder's Phone # _____
Bidder's Fax # _____
Georgia Utility Contractor's License No.*

* Note: Required - Any bid not identified by correct license number will be considered incomplete & will not be accepted.)

- h. Terms used in this Bid which are defined in the General Conditions or Instructions will have the meanings indicated in the General Conditions or Instructions.

THIS BID SUBMITTED on _____, 20_____.If Bidder is:

An Individual

By _____ (SEAL)
(Individual's Name)

doing business as _____

Business address: _____

Phone Number: _____

A Partnership

Garden City - City Hall Rooftop Unit Replacement

By _____ (SEAL)
(Firm Name)

(General Partner)

Business address: _____

Phone Number: _____

A Corporation

By _____ (SEAL)
(Corporation Name)

(State of Incorporation)

By _____ (SEAL)
(Name of Person Authorized to Sign)

(Title)
(Corporate Seal)

Attest _____

Business address: _____

Phone Number: _____

Date of Qualification to do business is _____

PART 2 PRODUCTS

Not Applicable

PART 3 EXECUTION

Not Applicable

-- End of Document --

Garden City - City Hall Rooftop Unit Replacement

00 43 13

BID BOND

PART 1 GENERAL

PENAL SUM FORM

BIDDER: (Name and Address)

SURETY: (Name and Address of Principal Place of Business)

OWNER:
City of Garden City
100 Central Avenue
Garden City, Georgia 31405

BID

BID DUE DATE: _____

PROJECT (Brief Description Including Location):

City of Garden City
City Hall Rooftop Unit Replacement
100 Central Avenue
Garden City, Georgia 31405

BOND

BOND NUMBER _____

DATE (Not later than Bid Due Date)_____:

PENAL SUM: 5 PERCENT OF BID

IN WITNESS WHEREOF, Surety and Bidder, intending to be legally bound hereby, subject to the following terms hereof, do each cause this Bid Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

TERMS OF BID BOND

Garden City - City Hall Rooftop Unit Replacement

- a. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond.
- b. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents the executed Agreement required by the Bidding Documents, any performance and payment bonds, and Certification of Insurance required by the Bidding Documents and Contract Documents.
- c. This obligation shall be null and void if:
 - 1. Owner accepts Bidder's bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents, any performance and payment bonds and Certification of Insurance required by the Bidding Documents and Contract Documents, or
 - 2. All bids are rejected by Owner, or
 - 3. Owner fails to issue a notice of award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph e below).
- d. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
- e. Surety waives notice of and any and all defenses based on or arising out of any time extension to issue notice of award agreed to in writing by Owner and Bidder, provided that the time for issuing notice of award including extensions shall not in the aggregate exceed 120 days from the Bid Due Date without Surety's written consent.
- f. No suit or action shall be commenced under this Bond prior to [30] calendar days after the notice of default required in Paragraph d above is received by Bidder and Surety, and in no case later than one year after Bid Due Date.
- g. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
- h. Notice required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
- i. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent or representative who executed this Bond on behalf of Surety to execute, seal and deliver such Bond and bind the Surety thereby.

Garden City - City Hall Rooftop Unit Replacement

- j. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirements of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of the Bond conflicts with any applicable provision of any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
- k. The term "bid" as used herein includes a bid, offer or proposal as applicable.

CONTRACTOR AS PRINCIPAL

Company: _____

(Corp. Seal)

Signature: _____

Name and Title

SURETY

Company: _____

(Corp. Seal)

Signature: _____

Name and Title

Notes:

- (1) Above addresses are to be used for giving required notice.
- (2) Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.
- (3) All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.
- (4) Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the Project is located.
- (5) The power-of-attorney of the Attorney-in-fact signing for the surety company must be attached to the Bid Bond.

PART 2 PRODUCTS

Not Applicable

PART 3 EXECUTION

Not Applicable

-- End of Document --

00 45 13

STATEMENT OF BIDDER'S QUALIFICATIONS

PART 1 GENERAL

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized and submitted per Section 000130, Instructions to Bidders. If necessary, questions may be answered on separate attached sheets. The Bidder may submit any additional information he desires.

1. Name of Bidder:_____
2. Permanent main office _____

3. When organized:_____
4. If a corporation, where incorporated:_____
5. How many years have you been engaged in the contracting business under your present firm or trade name:_____
6. Contacts on hand: (Schedule these, showing amount of each contract, name, address and telephone number of Owner and/or Engineer; and the appropriate anticipated dates of completion.)
7. General character of work performed by your company:

8. Have you ever failed to complete any work awarded to you?_____
- If so, where and why?_____
- _____
9. Have you ever defaulted on a contract?_____If so, where and why?

10. List the more important projects recently completed by your company, stating the approximate cost for each, name, address and telephone number of Owner and/or Engineer; and the month and year completed.
11. List your major equipment and equipment manufacturer available for this contract.
12. Experience in construction work similar in importance to this project
13. Background and experience of the principal members of your organization, including officers.

Garden City - City Hall Rooftop Unit Replacement

14. Credit available: \$_____

15. Give bank references:_____

16. Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by the City?_____

17. Have the principals of the corporation ever been associated with another corporation?_____

18. The undersigned hereby authorizes and requests any person, firm or corporation to furnish any information requested by the City in verification of the recitals comprising this Statement of Bidder's Qualifications.

Dated this _____ day of _____, 20____.

NAME OF BIDDER

By:_____

Title:_____

STATE OF _____)

COUNTY OF _____)SS.

_____being duly sworn deposes and says that he is
_____of (Name of Organization):_____
and that the answers to the foregoing questions and all statements therein
contained are true and correct.

Subscribed and sworn to before me this _____day of _____, 20____

NOTARY PUBLIC
My Commission Expires

_____, 20____

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Document --

SECTION 00 45 19

NONCOLLUSION AFFIDAVIT

PART 1 GENERAL

THIS AFFIDAVIT IS TO ACCOMPANY THE BID

STATE OF GEORGIA

COUNTY OF _____

_____, of lawful age, being first duly sworn, on oath says that (s)he is the agent authorized by the bidder to submit the attached bid. Affiant further states that the bidder has not been a party to any collusion among bidders in restraint of freedom of competition by agreement to bid at a fixed price or to refrain from bidding; or with any state official or employee as to the quantity, quality, or price in the prospective contract, or any other terms of said prospective contract; or in any discussions between bidders and any state official concerning exchange of money or other thing of value for special consideration in the letting of a contract.

Name of Company

By: _____
Authorized Officer or Agent

Date of Execution Affidavit

Title of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME ON THIS THE

_____ DAY OF _____, 20__

Notary Public

My Commission Expires:

PART 2 PRODUCTS

Not Applicable

PART 3 EXECUTION

Not Applicable

-- End of Document --

SECTION 00 45 46.10

AFFIDAVIT VERIFYING STATUS FOR CITY PUBLIC BENEFIT

PART 1 GENERAL

By executing this affidavit under oath, as an applicant for Construction Contract services for Public Infrastructure Construction, as referenced in O.C.G.A. §50-36-1, from City of Garden City, the undersigned applicant verifies one of the following with respect to my application for a public benefit:

1. _____ I am a United States citizen.
2. _____ I am a legal permanent resident of the United States.
3. _____ I am a qualified alien or non-immigrant under the Federal Immigration and Nationality Act with an alien number issued by the Department of Homeland Security or other federal immigration agency.

My alien number issued by the Department of Homeland Security or other federal immigration agency is _____.

The undersigned applicant also hereby verifies that he or she is 18 years of age or older and has provided at least one secure and verifiable document, as required by O.C.G.A. §50-36-1(e)(1), with this affidavit.

The secure and verifiable document provided with this affidavit can best be classified as:

In making the above representation under oath, I understand that any person who knowingly and willfully makes a false, fictitious, or fraudulent statement or representation in an affidavit shall be guilty of a violation of O.C.G.A. §16-10-20, and face criminal penalties as allowed by such criminal statute.

Executed in _____(city), _____(state).

By: _____
Signature of Applicant Date

Printed Name of Applicant

SUBSCRIBED AND SWORN BEFORE ME ON THIS THE

_____DAY OF _____, 20__

Notary Public

My Commission Expires: _____

Garden City - City Hall Rooftop Unit Replacement

PART 2 PRODUCTS

Not Applicable

PART 3 EXECUTION

Not Applicable

-- End of Document --

SECTION 00 45 46.20

GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT AFFIDAVITS

PART 1 GENERAL

The City of Garden City and Contractor agree that compliance with the requirements of O.C.G.A. § 13-10-91, as amended, and Rule 300-10-1-.02 of the Rules of the Georgia Department of Labor are conditions of this Agreement for the physical performance of services.

The Contractor further agrees that its compliance with the requirements of O.C.G.A. § 13-10-91, as amended, and DOL Rule 300-10-1-.02 is attested to on the executed Contractor Affidavit and Agreement attached hereto.

If employing or contracting with any subcontractor(s) in connection with this Agreement, Contractor further agrees:

1. To secure from the subcontractor(s) an affidavit attesting to the subcontractor's compliance with O.C.G.A. § 13-10-91, as amended, and DOL Rule 300-10-1-.02; such affidavit being in the form attached hereto; and
2. To submit such subcontractor affidavit(s) to the City when the subcontractor(s) is retained, but in any event, prior to the commencement of work by the subcontractor(s).

The failure of Contractor to supply the affidavit of compliance at the time of execution of this Agreement and/or the failure of Contractor to continue to satisfy the obligations of O.C.G.A. § 13-10-91, as amended, and DOL Rule 300-10-1-.02 as set forth in this Agreement throughout the contract period shall constitute a material breach of the contract. Upon notice of such breach, Contractor shall be entitled to cure the breach within ten days, upon providing satisfactory evidence of compliance with the terms of this Agreement and State law. Should the breach not be cured, City of Garden City shall be entitled to all available remedies, including termination of the contract and damages.

Required Affidavits are included on the following pages.

CONTRACTOR AFFIDAVIT & AGREEMENT

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. §13-10-91, as amended, stating affirmatively that the individual, firm or corporation which is contracting with City of Garden City, has registered and is participating in a federal work authorization program* [an electronic verification of work authorization program operated by the U.S. Department of Homeland Security or any equivalent federal work authorization program operated by the U.S. Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603], in accordance with the provisions established in O.C.G.A. §13-10-91, as amended.

Garden City - City Hall Rooftop Unit Replacement

The undersigned further agrees that should it employ any new employees or contract with any subcontractor(s) for the physical performance of services pursuant to the contract with City of Garden City, the Contractor will secure from the subcontractor(s) verification of compliance with O.C.G.A. §13-10-91, as amended, on the attached Subcontractor Affidavit. The undersigned contractor further agrees to use the federal work authorization program throughout the contract period and to maintain records of such compliance and to provide a copy of each such verification to City of Garden City, at the time the subcontractor(s) is retained to perform such services.

Name of Public Employer

Name of Project

Name of Contractor

EEV / Basic Pilot Program* User
Identification Number
(<https://e-verify.uscis.gov/enroll/>)

Date of Authorization

By: _____
Authorized Officer or Agent

Date of Execution Affidavit

Title of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME ON THIS THE

_____ DAY OF _____, 20__

Notary Public

My Commission Expires:

* Note: As of the effective date of O.C.G.A. §13-10-91, the applicable federal work authorization program is the "EEV / Basic Pilot Program" operated by the U.S. Citizenship and Immigration Services Bureau (USCIS) of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA).

SUBCONTRACTOR AFFIDAVIT & AGREEMENT

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. §13-10-91, as amended, stating affirmatively that the individual, firm or corporation which is contracting with _____ (Contractor) on behalf of City of Garden City, has registered and is participating in a federal work authorization program* [an electronic verification of work authorization program operated by the U.S. Department of Homeland Security or any equivalent federal work authorization program operated by the U.S. Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603, in accordance with the provisions established in O.C.G.A. §13-10-91, as amended. Additionally, the undersigned subcontractor will forward notice of the receipt of an affidavit from a sub-subcontractor that has contracted with a sub-subcontractor to forward, within five business days of receipt, a copy of such notice to the contractor. Subcontractor hereby attests that its federal work authorization user identification number and date of authorization are as shown below:

_____ Name of Public Employer	_____ Name of Project
_____ Name of Sub-contractor	
_____ EEV / Basic Pilot Program* User Identification Number (https://e-verify.uscis.gov/enroll/)	_____ Date of Authorization
By: _____ Authorized Officer or Agent	_____ Date of Execution Affidavit
_____ Title of Authorized Officer or Agent	

SUBSCRIBED AND SWORN BEFORE ME ON THIS THE

_____ DAY OF _____, 20__

_____ Notary Public

My Commission Expires:

* Note: As of the effective date of O.C.G.A. § 13-10-91, the applicable federal work authorization program is the "EEV / Basic Pilot Program" operated by the U.S. Citizenship and Immigration Services Bureau (USCIS) of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA).

SUB-SUBCONTRACTOR AFFIDAVIT & AGREEMENT

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. § 13-10-91, as amended, stating affirmatively that the individual, firm or corporation which is contracting with City of Garden

Garden City - City Hall Rooftop Unit Replacement

City, has registered and is participating in a federal work authorization program* [an electronic verification of work authorization program operated by the U.S. Department of Homeland Security or any equivalent federal work authorization program operated by the U.S. Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603], in accordance with the provisions established in O.C.G.A. § 13-10-91, as amended. The undersigned sub-subcontractor shall submit at the time of such contract, this affidavit to the sub-contractor or sub-subcontractor with whom such sub-contractor has privity of contract. Additionally, the undersigned sub-subcontractor will forward notice of the receipt of an affidavit from a sub-subcontractor that has contracted with a sub-subcontractor within five business days of receipt, a copy of such notice to the subcontractor or sub-subcontractor with whom such sub-subcontractor has privity of contract. Sub-subcontractor hereby attests that its federal work authorization user identification number and date of authorization are as shown below:

_____ Name of Public Employer	_____ Name of Project
_____ Name of Sub-subcontractor	
_____ EEV / Basic Pilot Program* User Identification Number (https://e-verify.uscis.gov/enroll/)	_____ Date of Authorization
By: _____ Authorized Officer or Agent	_____ Date of Execution Affidavit
_____ Title of Authorized Officer or Agent	
SUBSCRIBED AND SWORN BEFORE ME ON THIS THE	
_____ DAY OF _____, 20__	
_____ Notary Public	

My Commission Expires:

* Note: As of the effective date of O.C.G.A. §13-10-91, the applicable federal work authorization program is the "EEV / Basic Pilot Program" operated by the U.S. Citizenship and Immigration Services Bureau (USCIS) of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA).

PART 2 PRODUCTS

Not Applicable

PART 3 EXECUTION

Not Applicable

-- End of Document --

Garden City - City Hall Rooftop Unit Replacement

00 51 00

NOTICE OF AWARD

PART 1 GENERAL

To:

Project Description:

The Owner has considered the Bid submitted by you for the above described Work in response to its Advertisement For Bids dated _____, 2019 and Information For Bidders.

You are hereby notified that your Bid has been accepted for items in the amount of \$_____

You are required by the Instructions to Bidders document to execute the General Contract and furnish the required Performance Bond and Payment Bond within ten calendar days from the date of receipt of this Notice by you. Return all document copies to the Engineer for further processing, review and distribution to the parties to the contract.

If you fail to execute said Agreement and to furnish said Bonds within ten days from the date of receipt of this Notice, the Owner will be entitled to consider his rights stipulated in the Contract Documents.

You are required to return acknowledged copies of this Notice Of Award and Agreement to the Engineer within ten days of receipt of the Documents.

Dated this _____ day of _____, 2019.

Owner: _____

By: _____

Title: _____

ACCEPTANCE OF NOTICE

Receipt of the Notice of Award is hereby acknowledged by:

By: _____

Garden City - City Hall Rooftop Unit Replacement

Title: _____

Date: _____

PART 2 PRODUCTS

Not Applicable

PART 3 EXECUTION

Not Applicable

-- End of Document --

00 52 13

AGREEMENT

PART 1 GENERAL

THIS AGREEMENT is dated as of the ____ day of _____ in the year 20__ by and between City of Garden City (hereinafter called OWNER) and

(hereinafter called CONTRACTOR). OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

1.1 WORK

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

City Hall Rooftop Unit Replacement

1.2 ENGINEER

The Project has been designed by Chatham Engineering, LLC, who is hereinafter called ENGINEER and who is to act as OWNER's representative, assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

1.3 CONTRACT TIMES

- a. The Work will be substantially completed within 70 days after the date when the Contract Times commence to run as provided in the General Conditions, and completed and ready for final payment in accordance with the General Conditions within 150 days after the date when the Contract Times commence to run.
- b. Liquidated Damages. OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the times specified in Paragraph "CONTRACT TIMES" Subparagraph a above, plus any extensions thereof allowed in accordance with the General Conditions.
- c. They also recognize the delays, expense and difficulties involved in proving the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER two hundred dollars (\$200.00) for each day that expires after the time specified in Paragraph "CONTRACT TIMES" Subparagraph a above for Substantial Completion until the Work is substantially complete. After Substantial Completion, if CONTRACTOR shall neglect, refuse or fail to complete the remaining Work within the time specified in Paragraph "CONTRACT TIMES" Subparagraph a for completion and readiness for final payment or any proper extension thereof granted by OWNER, CONTRACTOR shall pay OWNER two hundred dollars (\$200.00) for each day that expires after the time specified in

Garden City - City Hall Rooftop Unit Replacement

Paragraph "CONTRACT TIMES" Subparagraph a for completion and readiness for final payment.

1.4 CONTRACT PRICE

OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to Subparagraph a below:

- a. The Contractor agrees to perform all of the Work described in the Contract Documents and comply with the terms therein for the sum of

(\$_____), payable in current funds, subject to adjustments, if any, as provided in the Contract Documents.

1.5 PAYMENT PROCEDURES

CONTRACTOR shall submit Applications for Payment in accordance with Part "PAYMENTS TO CONTRACTOR AND COMPLETION" of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

1.5.1 Progress Payments/Retainage

OWNER shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment as recommended by ENGINEER during construction as provided in Subparagraphs a and b below.

- a. All such payments will be measured by values of work completed as provided by the schedule established in the General Conditions (and in the case of Unit Price Work based on the number of units completed), plus the value of materials and equipment suitably stored, insured, and protected at the construction site, and with the OWNER's consent, such materials and equipment suitably stored, insured and protected off-site at a location approved by the ENGINEER, less a retainage of ten percent of each progress payment requested; provided, however, when fifty percent of the Contract Price, including change orders and other additions to the Contract, is due and the manner of completion of the contract work and its progress is reasonably satisfactory to the ENGINEER, in its sole discretion, the OWNER shall withhold no more retainage on additional work completed. The CONTRACTOR shall be entitled to withhold retainage from subcontractors accordingly. At the discretion of the OWNER, upon recommendation of the ENGINEER and with consent of the CONTRACTOR, the retainage of each subcontractor may be released separately as the subcontractor completes his work.
- b. If, after discontinuing the retainage, the ENGINEER determines that the work is unsatisfactory or has fallen behind schedule, retention shall be resumed at the previous level. If retention is resumed, the CONTRACTOR shall be entitled to withhold retainage from subcontractors accordingly.

1.5.2 Final Payment

- a. At substantial completion of the contract work and as the ENGINEER determines the work to be reasonably satisfactory, the OWNER shall

within 30 days after presentation of Application and other appropriate documentation as required by the General Conditions are provided, pay the retainage to the CONTRACTOR. If at that time there are any remaining incomplete minor items, an amount equal to 200 percent of the value of each item, as determined by the ENGINEER, shall be withheld until such item or items are completed. The reduced retainage shall be shared by the CONTRACTOR and subcontractors as their interests may appear. The CONTRACTOR shall, within [ten] days from CONTRACTOR's receipt of retainage from the OWNER, pass through payments to subcontractors and shall reduce each subcontractor's retainage in the same manner as the CONTRACTOR's retainage is reduced by the OWNER provided that the value of each subcontractor's work complete and in place equals fifty percent of his subcontract value, including approved change orders and other additions to the subcontract value and provided further that the work of the subcontractor is proceeding satisfactorily and the subcontractor has provided or provides such satisfactory reasonable assurances of continued performance and financial responsibility to complete his work, including any warranty work as the CONTRACTOR in his reasonable discretion may require, including, but not limited to, a payment and performance bond.

- b. The subcontractor shall, within ten days from the subcontractor's receipt of retainage from the CONTRACTOR, pass through payments to the lower tier subcontractors and shall reduce each lower tier subcontractor's retainage in the same manner as the subcontractor's retainage is reduced by the CONTRACTOR, provided that the value of each lower tier subcontractor's work complete and in place equals fifty (50%) percent of his subcontract value, including approved change orders and other additions to the subcontract value and provided further, that the work of the lower tier subcontractor is proceeding satisfactorily and the lower tier subcontractor has provided such satisfactory reasonable assurances of continued performance and financial responsibility to complete his work including any warranty work as the subcontractor in his reasonable discretion may require, including, but not limited to, a payment and performance bond.
- c. All prior certificates or estimates upon which payments have been made are approximate only, and subject to correction in the final payment.

1.5.3 Contractor's Agreements with Subcontractors

The CONTRACTOR hereby covenants and agrees with OWNER to obtain written agreements from each subcontractor setting forth payment procedures in accordance with the foregoing provisions of this Section. Nothing contained herein shall preclude the CONTRACTOR, prior to making payment to a subcontractor, from requiring the payee to submit satisfactory evidence that all payrolls, materials bills, and other indebtedness connected with the work have been paid

1.6 CONTRACTOR'S REPRESENTATIONS

In order to induce OWNER to enter into this Agreement, CONTRACTOR makes the following representations:

- a. CONTRACTOR has examined and carefully studied the Contract Documents (including the Addenda listed in Paragraph "CONTRACT DOCUMENTS", if

any) and the other related data identified in the Bidding Documents including "technical data."

- b. CONTRACTOR has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, process, performance or furnishing of the Work.
- c. CONTRACTOR is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.
- d. CONTRACTOR is aware of the general nature of work to be performed by OWNER and others at the site that relates to the Work as indicated in the Contract Documents.
- e. CONTRACTOR has correlated the information known to CONTRACTOR, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.
- f. CONTRACTOR has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies that CONTRACTOR has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

1.7 CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work consist of the following:

- a. Agreement
- b. Bid Form
- c. Performance Bond
- d. Payment Bond
- e. Notice to Proceed
- f. General Conditions
- g. Supplementary Conditions
- h. Specifications bearing the title City Hall Rooftop Unit Replacement as listed in table of contents thereof.
- i. Drawings bearing the title City Hall Rooftop Unit Replacement.
- j. Addenda number(s) _____ to _____, inclusive.
- k. Documentation submitted by CONTRACTOR (if applicable) prior to Notice of Award.
- l. Other exhibits (if applicable) to this Agreement marked, _____.
- m. The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All written Amendments and other documents amending, modifying or supplementing the Contract Documents pursuant to requirements of the General Conditions.

The documents listed as "Bid Form" et seq. above are attached to this Agreement (except as expressly noted otherwise above).

There are not Contract Documents other than those listed above in this Paragraph "CONTRACT DOCUMENTS". The Contract Documents may only be amended, modified or supplemented as provided in the General Conditions.

1.8 MISCELLANEOUS

- a. Terms used in this Agreement, which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.
- b. No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.
- c. OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.
- d. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon OWNER and CONTRACTOR, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement in triplicate. One counterpart each has been delivered to OWNER, CONTRACTOR and ENGINEER. All portions of the Contract Documents have been signed, initialed or identified by OWNER and CONTRACTOR or identified by ENGINEER on their behalf.

This Agreement will be effective on _____, 20____ (which is the Effective Date of the Agreement)

OWNER:

CONTRACTOR:

By: _____

By: _____

Title: _____

Title: _____

(SEAL)

(SEAL)

Garden City - City Hall Rooftop Unit Replacement

Attest_____

Address for giving notices:

(Attach evidence of authority to sign
and resolution or other documents
authorizing execution of Agreement)

Attest_____

Address for giving notices:

Agent for service of process:

(If CONTRACTOR is a corporation,
of authority to sign.)

PART 2 PRODUCTS

Not Applicable

PART 3 EXECUTION

Not Applicable

-- End of Document --

SECTION 00 55 00

NOTICE TO PROCEED

PART 1 GENERAL

1.1 REFERENCES

To:

Project Description:

You are hereby notified to commence Work in accordance with the Agreement dated _____, 2019 and you are to complete the Work within _____ consecutive calendar days thereafter. The date of completion of all Work is therefore _____, 2019.

Dated this _____ day of _____, 2019.

Owner: _____

By: _____

Title: _____

ACCEPTANCE OF NOTICE

Receipt of the Notice of Award is hereby acknowledged by:

By: _____

Title: _____

Date: _____

PART 2 PRODUCTS

Not Applicable

Garden City - City Hall Rooftop Unit Replacement

PART 3 EXECUTION

Not Applicable

-- End of Document --

00 61 13.13

PERFORMANCE BOND

PART 1 GENERAL

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR: (Name and Address)

OWNER:

City of Garden City
100 Central Avenue
Garden City, Georgia 31405

CONSTRUCTION CONTRACT:

Date: _____

Amount: _____

Description (Name and Location):

City of Garden City
City Hall Rooftop Unit Replacement
100 Central Avenue
Garden City, Georgia 31405

SURETY (Name and Principal Place of Business): _____

BOND:

Date: _____

Amount: _____ 100 percent of contract amount)

Bond Number: _____

- a. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

Garden City - City Hall Rooftop Unit Replacement

- b. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except to participate in conferences as provided in Subparagraph c.1 below.
- c. If there is no Owner Default, the Surety's obligation under this Bond shall arise after:
 - 1. The Owner has notified the Contractor and the Surety at its address described in Paragraph j below, that the Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Construction Contract. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default; and
 - 2. The Owner has declared a Contractor Default and formally terminated the Contractor's right to complete the contract. Such Contractor Default shall not be declared earlier than twenty days after the Contractor and the Surety have received notice as provided in Subparagraph c.1 above; and
 - 3. The Owner has agreed to pay the Balance of the Contract Price to the Surety in accordance with the terms of the Construction Contract or to a contractor selected to perform the Construction Contract in accordance with the terms of the contract with the Owner.
- d. When the Owner has satisfied the conditions of Paragraph c above, the Surety shall promptly and at the Surety's expense take one of the following actions:
 - 1. Arrange for the Contractor, with consent of the Owner, to perform and complete the Construction Contract; or
 - 2. Undertake to perform and complete the Construction Contract itself, through its agents or through independent contractors; or
 - 3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and the contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the
 - 4. Pay Owner the amount of damages as described in Paragraph f below in excess of the Balance of the Contract Price incurred by the Owner resulting from the Contractor's default; or
 - 5. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

- a. After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, tender payment therefore to the Owner; or
 - b. Deny liability in whole or in part and notify the Owner citing reasons therefor.
- e. If the Surety does not proceed as provided in Paragraph d above with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Subparagraph d.4 above, and the Owner refuses the payment tendered or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.
- f. After the Owner has terminated the Contractor's right to complete the Construction Contract, and if the Surety elects to act under Subparagraphs d.1, d.2, or d.3 above, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. To the limit of the amount of this Bond, but subject to commitment by the Owner of the Balance of the Contract Price to mitigation of costs and damages on the Construction Contract, the Surety is obligated without duplication for:
 - 1. The responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
 - 2. Additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the action or failure to act of the Surety under Paragraph d above; and
 - 3. Liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
- g. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, or successors.
- h. The Surety hereby waives notice of any change, including changes of time to the Construction Contract or to related subcontracts, purchase orders and other obligations.
- i. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after Contractor Default or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or

prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

- j. Notice to the Surety or the Contractor shall be mailed or delivered to the address shown on the signature page.
- k. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
- l. Definitions.
 - 1. Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
 - 2. Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.
 - 3. Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract.
 - 4. Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

Garden City - City Hall Rooftop Unit Replacement

CONTRACTOR AS PRINCIPAL

SURETY

Company: _____

(Corp. Seal)

(Corp. Seal)

Signature: _____

Signature: _____

Name and Title

Name and Title

Contractor Address for Giving Notices: _____

Surety Address for Giving Notices: _____

Notes:

- (1) Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the Project is located.
- (2) The power-of-attorney of the Attorney-in-fact signing for the surety company must be attached to the Performance Bond.

PART 2 PRODUCTS

Not Applicable

PART 3 EXECUTION

Not Applicable

-- End of Document --

Garden City - City Hall Rooftop Unit Replacement

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PAYMENT BOND

PART 1 GENERAL

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR: (Name and Address)

OWNER:

City of Garden City
100 Central Avenue
Garden City, Georgia 31405

CONSTRUCTION CONTRACT:

Date: _____

Amount: _____

Description (Name and Location):

City of Garden City
City Hall Rooftop Unit Replacement
100 Central Avenue
Garden City, Georgia 31405

SURETY (Name and Principal Place of Business): _____

BOND:

Date: _____

Amount: _____ 100 percent of contract amount)

Bond Number: _____

- a. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner and for the use and protection of all subcontractors and persons supplying labor, materials, machinery and equipment in the prosecution of the Work involved in this Construction Contract.

- b. With respect to the Owner, this obligation shall be null and void if the Contractor:
 - 1. Promptly makes payment, directly or indirectly, for all sums due Claimants, and
 - 2. Defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity whose claim, demand, lien or suit is for payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, provided the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 11) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety, and provided there is no Owner Default.
- c. With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment directly or indirectly, for all sums due.
- d. The Surety shall have no obligations to Claimant unless the Claimant has substantially complied with the requirements of O.C.G.A. 36-82-104 by giving the notices provided for therein. Each Claimant failing to substantially comply with said Code Section shall be deemed to have waived the protection of the payment bond. No Claimant shall file an action for payment against the Owner, Contractor or Surety, except in accordance with this section.
 - 1. Claimants who are employed by or have a direct contract with the Contractor have given notice to the Surety (at the address shown on the signature page) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.
 - 2. Claimants who do not have a direct contract with the Contractor:
 - a. Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the Owner, within [90] days after having last performed labor or last furnished materials or equipment included in the claim, stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and
 - b. Have either received a rejection in whole or in part from the Contractor, or not received within [30] days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and
 - c. Not having been paid within the above 30 days, have sent a written notice to the Surety (at the address shown on the signature page) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.

Garden City - City Hall Rooftop Unit Replacement

- e. If a notice required by Paragraph d above is given by the Owner to the Contractor or to the Surety, that is sufficient compliance.
- f. When the Claimant has satisfied the conditions of Paragraph d above, the Surety shall promptly and at the Surety's expense, take the following actions:
 - 1. Send an answer to the Claimant, with a copy to the Owner, within [45] days after receipt of the claim, stating the amounts that are undisputed and that basis for challenging any amount that are disputed.
 - 2. Pay or arrange for payment of any undisputed amounts.
- g. The Surety's total obligation shall not exceed the amount of this Bond and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
- h. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any Construction Performance Bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
- i. The Surety shall not be liable to the Owner, Claimants or others for obligation of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments, to give notices on behalf of, or otherwise have obligations to Claimants under this Bond.
- j. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.
- k. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, the Owner or the Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on this Bond.
- l. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in the Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
- m. Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

Garden City - City Hall Rooftop Unit Replacement

n. Definitions:

1. Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.
2. Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.
3. Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

CONTRACTOR AS PRINCIPAL

Company: _____

(Corp. Seal)

SURETY

Company: _____

(Corp. Seal)

Signature: _____

Name and Title

Contractor Address for Giving Notices:

Signature: _____

Name and Title

Surety Address for Giving Notices:

Notes:

- (1) Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the Project is located.
- (2) The power-of-attorney of the Attorney-in-fact signing for the surety company must be attached to the Payment Bond.

Garden City - City Hall Rooftop Unit Replacement

PART 2 PRODUCTS

Not Applicable

PART 3 EXECUTION

Not Applicable

-- End of Document --

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GENERAL CONDITIONS

PART 1 DEFINITIONS AND TERMINOLOGY

1.1 DEFINED TERMS

- a. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial letters in the Contract Documents include references to identified parts and paragraphs, and the titles of other documents or forms.
 1. Addenda: Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. Agreement: The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.
 3. Applicationfor Payment: The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. Asbestos: Any material that contains more than one percent asbestos and is mable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
 5. Bid: The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 6. Bidder: The individual or entity who submits a Bid directly to Owner.
 7. Bidding Documents: The Bidding Requirements and the proposed Contract Documents (including all Addenda).
 8. Bidding Requirements: The Advertisement or Invitation to Bid, Instructions to Bidders, bid security of acceptable form, if any, and the Bid Form with any supplements.
 9. Change Order: A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.
 10. Claim: A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other

relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. Contract: The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.
12. Contract Documents: Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor's submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
13. Contract Price: The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.3 in the case of Unit Price Work).
14. Contract Times: The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any, (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
15. Contractor: The individual or entity with whom Owner has entered into the Agreement.
16. Cost of the Work-See Paragraph 11.1.a for definition.
17. Drawings: That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
18. Effective Date of the Agreement: The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
19. Engineer: The individual or entity named as such in the Agreement.
20. Field Order: A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
21. General Requirements: Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.
22. Hazardous Environmental Condition: The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

23. Hazardous Waste: The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
24. Laws and Regulations; Laws or Regulations: Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
25. Liens: Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
26. Milestone: A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.
27. Notice of Award: The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
28. Notice to Proceed: A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.
29. Owner: The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
30. PCBs: Polychlorinated biphenyls.
31. Petroleum: Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
32. Progress Schedule: A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
33. Project: The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
34. Project Manual: The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
35. Radioactive Material: Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

36. Related Entity: An officer, director, partner, employee, agent, consultant, or subcontractor.
37. Resident Project Representative: The authorized representative of Engineer who may be assigned to the Site or any part thereof.
38. Samples: Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
39. Schedule of Submittals: A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
40. Schedule of Values: A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.
41. Shop Drawings: All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
42. Site: Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
43. Specifications: That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
44. Subcontractor: An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
45. Substantial Completion: The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.
46. Successful Bidder: The Bidder submitting a responsive Bid to whom Owner makes an award.
47. Supplementary Conditions: That part of the Contract Documents which amends or supplements these General Conditions.
48. Supplier: A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or

with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or any Subcontractor.

49. Underground Facilities: All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
50. Unit Price Work: Work to be paid for on the basis of unit prices.
51. Work: The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
52. Work Change Directive: A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evident that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.2 TERMINOLOGY

- a. The following words or terms are not defined but, when used in the Bidding Requirements or Contract Documents, have the following meaning.
- b. Intent of Certain Terms or Adjectives
 1. The Contract Documents include the terms "as allowed," "as approved," "as ordered", "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action or determination will be solely to evaluate, in general, the Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake

responsibility contrary to the provisions of Paragraph 9.9 or any other provision of the Contract Documents.

c. Day

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

d. Defective

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents, or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents, or
 - c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.4 or 14.5).

e. Furnish, Install, Perform, Provide

1. The word "furnish", when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 2. The word "install", when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 3. The words "perform" or "provide", when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
 4. When "furnish", "install", "perform", or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.
- f. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

PART 2 PRELIMINARY MATTERS

2.1 DELIVERY OF BONDS AND EVIDENCE OF INSURANCE

Garden City - City Hall Rooftop Unit Replacement

- a. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- b. Evidence of Insurance: Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with PART 5.

2.2 COPIES OF DOCUMENTS

- a. Owner shall furnish to Contractor up to five printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.3 COMMENCEMENT OF CONTRACT TIMES; NOTICE TO PROCEED

- a. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.4 STARTING THE WORK

- a. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.5 BEFORE STARTING CONSTRUCTION

- a. Preliminary Schedules: Within ten days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:
 1. a preliminary Progress Schedule; indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;
 2. a preliminary Schedule of Submittals; and
 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.6 PRECONSTRUCTION CONFERENCE

- a. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.5.a, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

2.7 INITIAL ACCEPTANCE OF SCHEDULES

- a. At least ten days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.5.a. Contractor shall have an additional ten days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

PART 3 CONTRACT DOCUMENTS: INTENT AMENDING, REUSE

3.1 INTENT

- a. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- b. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to Owner.
- c. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in PART 9.
- d. In case of unresolved conflict between items of the Contract Documents, the following order of precedence shall govern, with the higher item taking precedence over a lower item:

Garden City - City Hall Rooftop Unit Replacement

1. Contract (including Supplemental Agreements and Change Orders thereto)
2. Addenda
3. Instructions to Bidders
4. Bid
5. Supplemental General Conditions
6. General Conditions
7. Specifications
8. Federal Provisions and Regulations
9. Governing Standard Specifications
10. Schedules on Drawings
11. Notes on Drawings
12. Details on Drawings
13. Large Scale Drawings
14. Small Scale Drawings
15. Dimensions Given in Figures
16. Scaled Dimensions
17. Additional Instructions and Detail Drawings
18. Shop Drawings

3.2 REFERENCE STANDARDS

a. Standards, Specifications, Codes, Laws, and Regulations.

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, or Engineer, or any of, their Related Entities, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.3 REPORTING AND RESOLVING DISCREPANCIES

a. Reporting Discrepancies

1. Contractor's Review of Contract Documents Before Starting Work: Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.

2. Contractor's Review of Contract Documents During Performance of Work: If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.a) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.4.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor knew or reasonably should have known thereof.

b. Resolving Discrepancies

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions- of the Contract Documents and:
 - a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.4 AMENDING AND SUPPLEMENTING CONTRACT DOCUMENTS

- a. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- b. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:
 1. A Field Order;
 2. Engineer's approval of a Shop Drawing or Sample; (Subject to the provisions of Paragraph 6.17.d.3); or
 3. Engineer's written interpretation or clarification.

3.5 REUSE OF DOCUMENTS

- a. Contractor and any Subcontractor or Supplier or other individual or entity performing or furnishing all of the Work under a direct or indirect contract with Contractor, shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or Engineer's consultants, including electronic media editions; or
 2. reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaption by Engineer.
- b. The prohibition of this Paragraph 3.5 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.6 ELECTRONIC DATA

- a. Copies of data furnished by Owner or Engineer to Contractor or Contractor to Owner or Engineer that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- b. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.

PART 4 AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.1 AVAILABILITY OF LANDS

- a. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.5.
- b. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

- c. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.2 SUBSURFACE AND PHYSICAL CONDITIONS

- a. Reports and Drawings: The Supplementary Conditions identify:
 - 1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Contract Documents; and
 - 2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that Engineer has used in preparing the Contract Documents.
- b. Limited Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:
 - 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
 - 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 - 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.3 DIFFERING SUBSURFACE OR PHYSICAL CONDITIONS

- a. Notice: If Contractor believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:
 - 1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.2 is materially inaccurate; or
 - 2. is of such a nature as to require a change in the Contract Documents; or
 - 3. differs materially from that shown or indicated in the Contract Documents; or
 - 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

5. then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.a), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.
- b. Engineer's Review: After receipt of written notice as required by Paragraph 4.3.a, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.
- c. Possible Price and Times Adjustments
 1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must meet any one or more of the categories described in Paragraph 4.3.a; and
 - b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.7 and 11.3.
 2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
 - a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
 - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 4.3.a.
 3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.5. However, Owner and Engineer, and any of their Related Entities shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute

resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.4 UNDERGROUND FACILITIES

- a. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and
2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all such information and data,
 - b. locating all Underground Facilities shown or indicated in the Contract Documents,
 - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction, and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

b. Not Shown or Indicated

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.a), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such

adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.5.

4.5 REFERENCE POINTS

- a. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.6 HAZARDOUS ENVIRONMENTAL CONDITION AT SITE

- a. Reports and Drawings: Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the Engineer in the preparation of the Contract Documents.
- b. Limited Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:
 - 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
 - 2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 - 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.
- c. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- d. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i)

secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.a); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any.

- e. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered to Contractor written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.5.
- f. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.5. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with PART 7.
- g. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.6.g shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- h. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this

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Paragraph 4.6.h shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- i. The provisions of Paragraphs 4.2, 4.3, and 4.4 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

PART 5 BONDS AND INSURANCE

5.1 PERFORMANCE, PAYMENT, AND OTHER BONDS

- a. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.7, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- b. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent must be accompanied by a certified copy of the agent's authority to act.
- c. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.1.b, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.1.b and 5.2.

5.2 LICENSED SURETIES AND INSURERS

- a. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.3 CERTIFICATES OF INSURANCE

- a. Contractor shall deliver to Owner, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

5.4 CONTRACTOR'S LIABILITY INSURANCE

- a. Contractor shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:
 - a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor,
 - or
 - b. by any other person for any other reason;
 5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- b. The policies of insurance required by this Paragraph 5.4 shall:
 1. with respect to insurance required by Paragraphs 5.4.a.3 through 5.4.a.6 inclusive, include as additional insured (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
 2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
 3. include completed operations insurance;

4. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.3 will so provide);
6. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.7; and
7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment.
 - a. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.5 OWNER'S LIABILITY INSURANCE

- a. In addition to the insurance required to be provided by Contractor under Paragraph 5.4, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.6 PROPERTY INSURANCE

- a. Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
 1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;
 2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, false work, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage,

(other than caused by flood) and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
 4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
 5. allow for partial utilization of the Work by Owner;
 6. include testing and startup; and
 7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.
- b. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with Paragraph 5.6 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.7.
- c. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.6 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.
- d. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under Paragraph 5.6, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.
- 5.7 WAIVER OF RIGHTS
- a. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.6 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents,

consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insured or additional insured (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

- b. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for:
 - 1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 - 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.5, after Substantial Completion pursuant to Paragraph 14.4, or after final payment pursuant to Paragraph 14.7.
- c. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.7.b shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them.

5.8 RECEIPT AND APPLICATION OF INSURANCE PROCEEDS

- a. Any insured loss under the policies of insurance required by Paragraph 5.6 will be adjusted with Owner and made payable to Owner as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.8.b. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received

applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.

- b. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.9 ACCEPTANCE OF BONDS AND INSURANCE; OPTION TO REPLACE

- a. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with PART 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within ten days after receipt of the certificates (or other evidence requested) required by Paragraph 2.1.b. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 PARTIAL UTILIZATION, ACKNOWLEDGEMENT OF PROPERTY INSURER

- a. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.5, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.6 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

PART 6 CONTRACTOR'S RESPONSIBILITY

6.1 SUPERVISION AND SUPERINTENDENCE

- a. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for

the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

- b. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances. The superintendent will be Contractor's representative at the Site and shall have authority to act on behalf of Contractor. All communications given to or received from the superintendent shall be binding on Contractor. Provide a resume showing a minimum of five years experience in constructing similar projects.

6.2 LABOR: WORKING HOURS

- a. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- b. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.
- c. The Contractor shall not interrupt Owner's operations without prior written approval.

6.3 SERVICES, MATERIALS AND EQUIPMENT

- a. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.
- b. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- c. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.4 PROGRESS SCHEDULE

- a. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.7 as it may be adjusted from time to time as provided below.
 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.7) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of PART 12. Adjustments in Contract Times may only be made by a Change Order.

6.5 SUBSTITUTES AND "OR-EQUALS"

- a. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.
 1. "Or-Equal" Items: If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.5.a.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 1. it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 2. it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole,
 3. it has a proven record of performance and availability of responsive service; and
 - b. Contractor certifies that, if approved and incorporated into the Work:

1. there will be no increase in cost to the Owner or increase in Contract Times, and

2. it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. Substitute Items

a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.5.a.1, it will be considered a proposed substitute item.

b. Contractor shall submit sufficient information as provided below to allow Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

c. The requirements for review by Engineer will be as set forth in Paragraph 6.5.a.2.d, as supplemented in the General Requirements and as Engineer may decide is appropriate under the circumstances.

d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

1. shall certify that the proposed substitute item will:

a. perform adequately the functions and achieve the results called for by the general design,

b. be similar in substance to that specified, and

c. be suited to the same use as that specified;

2. will state:

a. the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time;

b. whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

c. whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

3. will identify:

a. all variations of the proposed substitute item from that specified, and

b. available engineering, sales, maintenance, repair, and replacement services;

4. and shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change,

- b. Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.5.a.2.
 - c. Engineer's Evaluation: Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.5.a and 6.5.b. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
 - d. Special Guarantee: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
 - e. Engineer's Cost Reimbursement: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.5.a.2 and 6.5.b whether or not Engineer approves a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
 - f. Contractor's Expense: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.
- 6.6 CONCERNING SUBCONTRACTORS, SUPPLIERS, AND OTHERS
- a. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.6.b), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

- b. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued . No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.
- c. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
 - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity, nor
 - 2. shall anything in the Contract Documents create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- d. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- e. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- f. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- g. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in Paragraph 5.6,

the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.7 PATENT FEES AND ROYALTIES

- a. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of Owner or Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- b. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.8 PERMITS

- a. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.9 LAWS AND REGULATIONS

- a. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

- b. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.3.
- c. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.5.

6.10 TAXES

- a. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.
- b. The Contractor shall furnish the Owner with records and appropriate affidavits of all state sales tax paid on items which are eligible for tax refund to the Owner.

6.11 USE OF SITE AND OTHER AREAS

- a. Limitation on Use of Site and Other Areas
 - 1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
 - 2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
 - 3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant

against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

- b. Removal of Debris During Performance of the Work: During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- c. Cleaning: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- d. Loading Structures: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 RECORD DOCUMENTS

- a. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 SAFETY AND PROTECTION

- a. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- b. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground

Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

- c. Contractor shall comply with applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
- d. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- c. All damage, injury, or loss to any property referred to in Paragraph 6.13.a.2 or 6.13.a.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or , or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- f. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.7.b that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 SAFETY REPRESENTATIVE

- a. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs

6.15 HAZARD COMMUNICATION PROGRAMS

- a. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 EMERGENCIES

- a. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 SHOP DRAWINGS AND SAMPLES

- a. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the acceptable Schedule of Submittals (as required by Paragraph 2.7). Each submittal will be identified as Engineer may require.
 1. Shop Drawings
 - a. Submit number of copies specified in the General Requirements.
 - b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.d.
 2. Samples: Contractor shall also submit Samples to Engineer for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals.
 - a. Submit number of Samples specified in the Specifications.
 - b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.d.
- b. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals , any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- c. Submittal Procedures
 1. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:
 - a. all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - b. the suitability of all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;
 - c. all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; and

d. shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawing's or Sample Submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

d. Engineer's Review

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.c.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.c.1.

e. Resubmittal Procedures

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 CONTINUING THE WORK

- a. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.4 or as Owner and Contractor may otherwise agree in writing.

6.19 CONTRACTOR'S GENERAL WARRANTY AND GUARANTEE

- a. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its Related Entities shall be entitled to rely on representation of Contractor's warranty and guarantee.
- b. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- c. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 1. observations by Engineer;
 2. recommendation by Engineer or payment by Owner of any progress or final payment;
 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 4. use or occupancy of the Work or any part thereof by Owner;
 5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;
 6. any inspection, test, or approval by others; or
 7. any correction of defective Work by Owner.

6.20 INDEMNIFICATION

- a. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim,

cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.

- b. In any and all claims against Owner or Engineer or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.a shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- c. The indemnification obligations of Contractor under Paragraph 6.20.a shall not extend to the liability of Engineer and Engineer's officers, directors, partners, employees, agents, consultants and subcontractors arising out of:
 - 1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 DELEGATION OF PROFESSIONAL DESIGN SERVICES

- a. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- b. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

- c. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- d. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.d.1.
- e. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

PART 7 OTHER WORK AT THE SITE

7.1 RELATED WORK AT SITE

- a. Owner may perform other work related to the Project at the Site with Owner's employees, or via other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
 - 1. written notice thereof will be given to Contractor prior to starting any such other work; and
 - 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.5.
- b. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and shall properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.
- c. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this PART 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and

results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.2 COORDINATION

- a. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
 1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
 2. the specific matters to be covered by such authority and responsibility will be itemized; and
 3. the extent of such authority and responsibilities will be provided.
- b. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.3 LEGAL RELATIONSHIPS

- a. Paragraphs 7.1.a and 7.2 are not applicable for utilities not under the control of Owner.
- b. Each other direct contract of Owner under Paragraph 7.1.a shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's actions or inactions.
- c. Contractor shall be liable to Owner and any other contractor for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's action or inactions.

PART 8 OWNER'S RESPONSIBILITIES

8.1 COMMUNICATIONS TO CONTRACTOR

- a. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.2 REPLACEMENT OF ENGINEER

- a. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.3 FURNISH DATA

- a. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.4 PAY WHEN DUE

- a. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.2.c and 14.7.c.

8.5 LANDS AND EASEMENTS: REPORTS AND TESTS

- a. Owner's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.1 and 4.5. Paragraph 4.2 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by Engineer in preparing the Contract Documents.

8.6 INSURANCE

- a. Owner's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in PART 5.

8.7 CHANGE ORDERS

- a. Owner is obligated to execute Change Orders as indicated in Paragraph 10.3.

8.8 INSPECTIONS, TESTS AND APPROVALS

- a. Owner's responsibility in respect to certain inspections, tests, and approvals is set forth in Paragraph 13.3.b.

8.9 LIMITATIONS ON OWNER'S RESPONSIBILITIES

- a. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- b. Owner has the right to limit or schedule, with Contractor's input, any work that may affect operation of Owner's facilities.

8.10 UNDISCLOSED HAZARDOUS ENVIRONMENTAL CONDITION

- a. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.6.

8.11 EVIDENCE OF FINANCIAL ARRANGEMENTS

- a. If and to the extent Owner has agreed to furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents, Owner's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

PART 9 ENGINEER'S STATUS DURING CONSTRUCTION

9.1 OWNER'S REPRESENTATIVE

- a. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents and will not be changed without written consent of Owner and Engineer.

9.2 VISITS TO SITE

- a. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- b. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.9. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.3 PROJECT REPRESENTATIVE

- a. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.9. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.4 AUTHORIZED VARIATIONS IN WORK

- a. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a

functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.5.

9.5 REJECTING DEFECTIVE WORK

- a. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.4, whether or not the Work is fabricated, installed, or completed.

9.6 SHOP DRAWINGS, CHANGE ORDERS AND PAYMENTS

- a. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
- b. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.
- c. In connection with Engineer's authority as to Change Orders, see PART 10, 11, and 12.
- d. In connection with Engineer's authority as to Applications for Payment, see PART 14.

9.7 DETERMINATIONS FOR UNIT PRICE WORK

- a. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.5.

9.8 DECISIONS ON REQUIREMENTS OF CONTRACT DOCUMENTS AND ACCEPTABILITY OF WORK

- a. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.

- b. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believe that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.5. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.5.b.
- c. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.5.
- d. When functioning as interpreter and judge under this Paragraph 9.8, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.9 LIMITATIONS ON ENGINEER'S AUTHORITY AND RESPONSIBILITIES

- a. Neither Engineer's authority or responsibility under this PART 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
- b. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- c. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- d. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.7.a will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.
- e. The limitations upon authority and responsibility set forth in this Paragraph 9.9 shall also apply to, the Resident Project Representative, if any, and assistants, if any.

PART 10 CHANGES IN THE WORK: CLAIMS

10.1 AUTHORIZED CHANGES IN THE WORK

- a. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- b. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.5.

10.2 UNAUTHORIZED CHANGES IN THE WORK

- a. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.4, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.4.b.

10.3 EXECUTION OF CHANGE ORDERS

- a. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
 1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.1.a, (ii) required because of acceptance of defective Work under Paragraph 13.8.a or Owner's correction of defective Work under Paragraph 13.9, or (iii) agreed to by the parties;
 2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
 3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.5; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.a.

10.4 NOTIFICATION TO SURETY

- a. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any bond to be given to a surety, the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.5 CLAIMS

- a. Engineer's Decision Required: All Claims, except those waived pursuant to Paragraph 14.9, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- b. Notice: Written notice stating the general nature of each Claim, shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.1.b. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of Paragraph 12.2.b. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).
- c. Engineer's Action: Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
 1. deny the Claim in whole or in part,
 2. approve the Claim, or
 3. notify the parties that the Engineer is unable to resolve the Claim. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- d. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- e. Engineer's written action under Paragraph 10.5.c or denial pursuant to Paragraphs 10.5.c.3 or 10.5.d will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in PART 16 within 30 days of such action or denial.
- f. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.5.

PART 11 COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.1 COST OF THE WORK

- a. **Costs Included:** The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.1.b, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in Paragraph 11.1.b.

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.
2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.1.
4. Costs of special consultants (including but not limited to Engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:

- a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
 - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, imposed by Laws and Regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
 - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.6.d), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
 - g. The cost of utilities, fuel, and sanitary facilities at the Site.
 - h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expresses, and similar petty cash items in connection with the Work.
 - i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.
- b. Costs Excluded: The term Cost of the Work shall not include any of the following items:
- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships),

general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.1.a.1 or specifically covered by Paragraph 11.1.a.4, all of which are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.1.a and 11.1.b.
- c. Contractor's Fee: When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.1.c.
- d. Documentation: Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.1.a and 11.1.b, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.2 ALLOWANCES

- a. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- b. Cash Allowances
 1. Contractor agrees that:
 - a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

c. Contingency Allowance

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

d. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.3 UNIT PRICE WORK

a. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

b. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.7.

c. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

d. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.5 if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
2. there is no corresponding adjustment with respect any other item of Work; and
3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

PART 12 CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.1 CHANGE OF CONTRACT PRICE

a. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice

submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.5.

- b. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:
 - 1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.3); or
 - 2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.1.c.2); or
 - 3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.1.b.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.1) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.1.c).
- c. Contractor's Fee: The Contractor's fee for overhead and profit shall be determined as follows:
 - 1. a mutually acceptable fixed fee; or
 - 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 11.1.a.1 and 11.1.a.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 11.1.a.3, the Contractor's fee shall be five percent;
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraph 12.1.c.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.1.a.1 and 11.1.a.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.1.a.4, 11.1.a.5, and 11.1.b;
 - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.1.c.2.a through 12.1.c.2.e, inclusive.

12.2 CHANGE OF CONTRACT TIMES

- a. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.5.
- b. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this PART 12.

12.3 DELAYS

- a. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.2.a. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by PART 7, fires, floods, epidemics, abnormal weather conditions, or acts of God. The Supplementary Conditions indicate the average number of days per month in which precipitation is in excess of 0.1 inches per day. The completion time will not be extended for precipitation unless the number of days per month exceed the number of days indicated in the Supplementary Conditions.
- b. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by PART 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- c. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.3.c.
- d. Owner, Engineer and the Related Entities of each of them shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or

arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

- e. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

PART 13 TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.1 NOTICE OF DEFECTS

- a. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. All defective Work may be rejected, corrected, or accepted as provided in this PART 13.

13.2 ACCESS TO WORK

- a. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's Site safety procedures and programs so that they may comply therewith as applicable.

13.3 TESTS AND INSPECTIONS

- a. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- b. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
 - 1. for inspections, tests, or approvals covered by Paragraphs 13.3.c and 13.3.d below;
 - 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in said Paragraph 13.4.c; and
 - 3. as otherwise specifically provided in the Contract Documents.
 - 4. testing lab brought onto the site prior to completion of the portion of the work to be tested, the Contractor shall have all work in place and approved by the Engineer prior to bringing testing lab to the site.
- c. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection

therewith, and furnish Engineer the required certificates of inspection or approval.

- d. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.
- e. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation.
- f. Uncovering Work as provided in Paragraph 13.3.e shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.4 UNCOVERING WORK

- a. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- b. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.
- c. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.5.
- d. If, the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.5.

13.5 OWNER MAY STOP THE WORK

- a. If the Engineer deems the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may direct the Engineer to order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.6 CORRECTION OR REMOVAL OF DEFECTIVE WORK

- a. Promptly after receipt of notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).
- b. When correcting defective Work under the terms of this Paragraph 13.6 or Paragraph 13.7, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.7 CORRECTION PERIOD

- a. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.a is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 1. repair such defective land or areas; or
 2. correct such defective Work; or
 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- b. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not

limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

- c. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- d. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.7, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- e. Contractor's obligations under this Paragraph 13.7 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.8 ACCEPTANCE OF DEFECTIVE WORK

- a. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.5. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.9 OWNER MAY CORRECT DEFECTIVE WORK

- a. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.6.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.
- b. In exercising the rights and remedies under this Paragraph 13.9, Owner shall proceed expeditiously. In connection with such corrective or

remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

- c. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.9 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.5. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

d. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.9.

PART 14 PAYMENTS TO CONTRACTOR AND COMPLETION

14.1 SCHEDULE OF VALUES

- a. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.2 PROGRESS PAYMENTS

- a. Applications for Payments
 - 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate

property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

b. Review of Applications

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations on the Site of the executed Work as an experienced and qualified design professional and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under Paragraph 9.7, and to any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or
 - b. that there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
 5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.2.b.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.9; or
 - d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.2.a.
- c. Payment Becomes Due
1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.2.d) become due, and when due will be paid by Owner to Contractor.
- d. Reduction in Payment
1. Owner may refuse to make payment of the full amount recommended by Engineer because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;

- b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - c. there are other items entitling Owner to a set-off against the amount recommended; or
 - d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.2.b.5.a through 14.2.b.5.c or Paragraph 15.2.a.
- 2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor corrects to Owner's satisfaction the reasons for such action.
 - 3. If it is subsequently determined that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.2.c.1.

14.3 CONTRACTOR'S WARRANTY OF TITLE

- a. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.4 SUBSTANTIAL COMPLETION

- a. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- b. Promptly after Contractor's notification, , Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- c. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work

substantially complete, Engineer will within said 14 days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

- d. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- e. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to complete or correct items on the tentative list.

14.5 PARTIAL UTILIZATION

a. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions.

- 1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner and Engineer that such part of the Work is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
- 2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
- 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.6 FINAL INSPECTION

- a. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.7 FINAL PAYMENT

- a. Application for Payment

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.4.b.7;
 - b. consent of the surety, if any, to final payment;
 - c. a list of all Claims against Owner that Contractor believes are unsettled; and
 - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.7.a.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

- b. Engineer's Review of Application and Acceptance

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.9. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

c. Payment Becomes Due

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and, will be paid by Owner to Contractor.

14.8 FINAL COMPLETION DELAYED

- a. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.1, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.9 WAIVER OF CLAIMS

- a. The making and acceptance of final payment will constitute:
 1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.6, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
 2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

PART 15 SUSPENSION OF WORK AND TERMINATION

15.1 OWNER MAY SUSPEND WORK

- a. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an extension of the Contract Times directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.5.

15.2 OWNER MAY TERMINATE FOR CAUSE

- a. The occurrence of any one or more of the following events will justify termination for cause:
 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.7 as adjusted from time to time pursuant to Paragraph 6.4);
 2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
 3. Contractor's disregard of the authority of Engineer; or
 4. Contractor's violation in any substantial way of any provisions of the Contract Documents.
- b. If one or more of the events identified in Paragraph 15.2.a occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:
 1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion),
 2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and
 3. complete the Work as Owner may deem expedient.
- c. If Owner proceeds as provided in Paragraph 15.2.b, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages

exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph Owner shall not be required to obtain the lowest price for the Work performed.

- d. Notwithstanding Paragraphs 15.2.b and 15.2.c, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- e. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.
- f. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.1.a, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.2.b, and 15.2.c.
- g. The Contractor acknowledges and agrees that if any court rules that termination by the Owner was wrongful termination, such action by the Owner shall be deemed a termination for convenience and the Contractor shall only be entitled to recover legitimate expenses as disclosed in Paragraph 15.3.

15.3 OWNER MAY TERMINATE FOR CONVENIENCE

- a. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
 - 3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
 - 4. reasonable expenses directly attributable to termination.

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- b. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

PART 16 DISPUTE RESOLUTION

16.1 METHODS AND PROCEDURES

- a. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.5 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.5.e.
- b. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.
- c. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.5.c or a denial pursuant to Paragraphs 10.5.c.3 or 10.5.d shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
 - 1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions, or
 - 2. agrees with the other party to submit the Claim to another dispute resolution process, or
 - 3. gives written notice to the other party of their intent to submit the Claim to a court of competent jurisdiction.

PART 17 MISCELLANEOUS

17.1 GIVING NOTICE

- a. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
 - 1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or
 - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.2 COMPUTATION OF TIMES

- a. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.3 CUMULATIVE REMEDIES

- a. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.4 SURVIVAL OF OBLIGATIONS

- a. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.5 CONTROLLING LAW

- a. This Contract is to be governed by the law of the state in which the Project is located.

17.6 HEADINGS

- a. PART and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

-- End of Document --

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SUPPLEMENTARY CONDITIONS

PART 1 GENERAL

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

1.1 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 INSURANCE REQUIREMENTS

The limits of liability for the insurance required by Part 5 of the General Conditions shall provide the following coverages for not less than the following amounts or greater where required by Laws and Regulations:

Workers' Compensation

- | | |
|--|--|
| (1) State: | Statutory |
| (2) Applicable Federal
(e.g. Longshoreman's | Statutory |
| (3) Employer's Liability | \$1,000,000 per occurrence
\$1,000,000 per person |

Contractor's Liability Insurance, which shall also include completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody and control of Contractor:

- | | |
|---|--------------|
| (1) General Aggregate
(Except Produces -- Completed Operations | \$1,000,000 |
| (2) Products -- Completed Operations Aggregate | \$1,000,000 |
| (3) Personnel and Advertising
Injury (Per Person/Organization) | \$1,000,000 |
| (4) Each Occurrence
(Bodily Injury and Property Damage) | \$1,000,000 |
| (5) Property Damage liability insurance will provide Explosion,
Collapse and Underground coverages where applicable. | |
| (6) Excess Liability
General Aggregate | \$2,000,000 |
| Each Occurrence | \$1,000,000] |

Automobile Liability:

- | | |
|--------------------|-------------|
| (1) Bodily Injury: | |
| Each Person | \$1,000,000 |
| Each Accident | \$1,000,000 |
| Property Damage | |
| Each Accident | \$1,000,000 |

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- (2) Combined Single Limit (Bodily Injury and Property Damage):
Each Accident \$1,000,000

Contractual Endorsement: The Contractual Liability coverage shall provide coverage for not less than the following amounts:

- (1) General Aggregate \$1,000,000

(2) Each Occurrence
Bodily Injury and Property Damage \$1,000,000

Additional Insureds:

Additional insureds on all insurance shall be listed as follows:

City of Garden City, Georgia
Brennan Jones Engineering Associates, LLC

1.3 NORMAL WEATHER CONDITIONS

Average Number of Days in which precipitation is in excess of 0.10 inches per day is tabulated below for the region in which the project is located. Completion time will not be extended for normal weather conditions. The time for completion as stated in the Contract Documents includes due allowance for calendar days on which work cannot be performed. For the purpose of this Contract, the Contractor agrees that he may expect to lose calendar days due to weather in accordance with the following table:

Jan.	9 days	May	8 days	Sep.	10 days
Feb.	8 days	June	12 days	Oct.	6 days
Mar.	9 days	July	13 days	Nov.	7 days
Apr.	7 days	Aug.	13 days	Dec.	8 days

Also, the Contractor agrees that the measure of extreme weather during the period covered by this Contract shall be the number of days in excess of those shown for each month in the table above, in which precipitation exceeded 0.10 inch and the average temperature failed to exceed 40 degrees F., averaged from the Savannah International Airport weather station in Savannah, Georgia. This is the same source of data used to determine normal weather losses. If the total accumulated number of calendar days lost to weather, from the start of work until the completion of project exceeds that total accumulated number to be expected for the same period from the table above, time for completion will be extended by the number of calendar days needed to include the excess number of calendar days lost. Request for extension in contract time shall be done in accordance with the General Conditions.

No change in Contract Sum will be authorized because of adjustments of Contract Time due to Owner's acceptance of Contract Claims for adjustments to Time due to abnormal weather conditions.

PART 2 PRODUCTS

Not Applicable

PART 3 EXECUTION

Not Applicable

-- End of Document --

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting all project submittals, including product data, product certificates, manufacturer certificates, test reports, shop drawings, color and finish selection information, samples, and other submittals.
- B. See also all other Divisions and Sections for additional submittal information as required by the Design Professional.

1.2 SUBMITTAL TYPES / DEFINITIONS

- A. Each submittal must be identified according to the following submittal types:
 - 1. Informational Submittal: Submittal item that is made for the purpose of supplying required information or information which demonstrate compliance with project requirements. While an Informational Submittal does not require the Design Professional's or Consultant's responsive action, it may be rejected for not complying with requirements, in which case the item would be required to be re-submitted. Also, in certain instances, corrective work may be required as the result of a rejected Informational Submittal.
 - 2. Action Submittal: Submittal item that is made for the purpose of supplying required information or information which demonstrate compliance with project requirements, and which does require the Design Professional's or Consultant's responsive action. Except as directed or indicated otherwise, an Action Submittal shall be submitted and approved prior to the commencement of the work to which it pertains.
 - 3. Administrative Submittal: Submittal item that is required as a part of general project management and administration. Most or all Administrative Submittals will be Informational Submittals.
 - 4. Technical Submittal: Submittal item that pertains to a particular aspect of the actual work. Most Technical Submittals will be Action Submittals, although some will instead be informational submittals.
 - 5. Periodic Submittal: Submittal item that is required during the course of construction (such as manufacturing or installation reports). Most or all Periodic Submittals will be Informational Submittals.
 - 6. Job-End Submittal: Submittal item that is required as a part of project close-out, operation and maintenance information, warranties, record documents, demonstration and training, or special requirements associated with Material and Final Completion. Do not submit Job-End Submittals with Technical Submittals. Most or all Job-End Submittals will be Informational Submittals.
 - 7. Component Submittal: Submittal (more accurately, transmittal) of actual components, such as extra materials, tools, parts that are specified to be required. While a Component Submittal does not require the Design Professional's or Consultant's responsive action, it may be rejected for not complying with requirements, in which case the item would be required to be re-submitted. Also, corrective work may be required as the result of a rejected Informational Submittal.
- B. Do not transmit or bind different type submittals together when such would encumber proper handling or action by the Design Professional; for instance, do not bind Informational Submittals together with Action Submittals.

1.3 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Design Professional may withhold action on a submittal requiring coordination with other submittals until related submittals are received. Failure on the part of the Design Professional to notify the Contractor that action on a submittal is pending related submittals shall not be cause for an extension in the Contract Time.
- B. Submittals Schedule/Log: Maintain and periodically submit a Schedule/Log of Submittals. Coordinate submittal and action dates with the Project Schedule, allowing adequate time {14 calendar days minimum} for review and action by the Design Professional, re-submittal, re-review and action, field measuring, ordering, manufacturing, fabrication, and delivery.
 1. Include for each line entry in the Submittal Schedule/Log columns to indicate no less than the following information:
 - a. Number
 - b. Section Article Number
 - c. Subject or Description
 - d. Content
 - e. Type Product
 - f. Type
 - g. Date, scheduled
 - h. Date, actual
 - i. Review Action Date, scheduled (for Action Submittals)
 - j. Review Action Date, actual (for Action Submittals)
 - k. Review Action
 2. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
 3. Submit current updated Submittal Schedule / Logs no less frequently than monthly and more frequently when required by the Design Professional.
- C. Identification / Transmittal of Submittals: Use the Project "Submittal Cover / Transmittal Sheet" form, which follows this Section, to transmit ALL submittal items, without exception. Complete all information on the form, entering "NA" in blanks that are not applicable. For Action Submittals, attach a fully completed copy of the "Project Submittal Cover / Transmittal Sheet" to the front of each and every copy of each and every submittal. A partially editable electronic copy of the "Project Submittal Cover / Transmittal Sheet" will be made available to the Contractor upon request. Submittals that are not properly and correctly identified will be returned with no action, a re-submittal will be required, and attributable delays will not be considered as cause for an extension in Contract Time.
- D. Processing Time: Allow enough time {14 calendar days minimum} for submittal review, including time for re-submittals, as follows. Time for review shall commence on Design Professional's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including re-submittals.
 1. Initial Review: Allow 14 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Design Professional will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Re-submittal Review: Allow 14 days for review of each re-submittal.
- E. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.
- F. Additional Copies: Unless additional copies are required for final submittal, and unless Design Professional observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
 1. All copies including additional copies submitted for maintenance manuals less three will not be

marked with action taken and will be returned.

- G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
 - 1. Note date and content of previous submittal.
 - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 - 3. Resubmit submittals until they are returned with a review stamp and note by either the Design Professional or his Consultant that does not indicate the requirement that they be resubmitted.
 - 4. The Design Professional shall be responsible for an initial and one subsequent review of the submittal. The Contractor shall be liable for additional cost of subsequent reviews due to non-compliance.
- H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, and installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- I. Use for Construction: Use only final submittals with mark indicating a review stamp and note by either the Design Professional or his Consultant that does not indicate the requirement that they be resubmitted.
- J. All submittals shall be made in a manner that will accommodate the progress of construction. No extension of Contract Time will be issued for construction delays caused by untimely submittals. All Action Submittals and all other submittals that are deemed relevant to the progress of the Work shall be provided according to the approved Submittals Schedule, and all such submittals shall be provided no later than within 60 days of commencement of work or other notice to provide submittals, or within 15% of the project schedule, whichever time period is shortest.
- K. If at the time of an Application for Payment, the provision of submittals is behind schedule, based on the current approved Submittal Schedule, the Contractor may not be allowed to request funds for General Conditions, which, if requested, will cause the Application to be returned without action.
- L. If the Agreement allows for the reduction of retainage, this reduction shall not be approved or allowed until all Action Submittals and all other submittals that are deemed relevant to the progress of the Work have been approved.

1.4 CONTRACTOR'S USE OF DESIGN PROFESSIONAL'S CAD FILES

- A. General: At Contractor's written request, copies of Design Professional's electronic drawing files may be provided on a limited basis to Contractor for Contractor's use in connection with Project, subject to the following conditions:
 - 1. The Design Professional assumes no liability for reliance upon these documents instead of actual physical measurements or examination of actual field conditions. The Design Professional's drawings are copyrighted and may not be used for any purposes other than for the construction of this building at this time and place.
 - 2. Each request must include specific information about the intended use of the electronic drawings, and the type electronic drawing file sought, and a list of the specific drawing sheets sought. These will be provided in response to each request at the sole discretion of the Design Professional.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
 - 1. Except as approved by the Design Professional, submit all Action Submittals required by each Section at one time. Bind and consolidate these to the greatest extent possible, taking care however that each individual submittal requirement is included.
- B. Product Data: Collect information into a single submittal for each element of construction and type of

product or equipment.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable.
 3. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Manufacturer's catalog cuts.
 - e. Wiring diagrams showing factory-installed wiring.
 - f. Printed performance curves.
 - g. Operational range diagrams.
 - h. Compliance with specified referenced standards.
 - i. Testing by recognized testing agency.
 4. Number of Copies: Submit copies of Product Data in a quantity to meet Contractor's requirements, considering that the Design Professional will retain three copies. Mark up and retain one returned copy as a Project Record Document.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal of Design Professional's electronic Drawings is otherwise permitted.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Dimensions.
 - b. Identification of products.
 - c. Fabrication and installation drawings.
 - d. Roughing-in and setting diagrams.
 - e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
 - f. Shopwork manufacturing instructions.
 - g. Templates and patterns.
 - h. Schedules.
 - i. Notation of coordination requirements.
 - j. Notation of dimensions established by field measurement.
 - k. Relationship to adjoining construction clearly indicated.
 - l. Seal and signature of professional engineer if specified.
 - m. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
 3. Number of Copies: Submit copies in a quantity to meet Contractor's requirements, considering that the Design Professional will retain three copies.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of appropriate Specification Section.
 3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

- a. Number of Samples: Submit no fewer than five full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Design Professional will retain three and will return the remaining submittal(s) with options selected.
5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit no fewer than four sets of Samples. Design Professional will retain three Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.
- E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location.
 1. Number of Copies: Submit copies of product schedule or list in a quantity to meet Contractor's requirements, considering that the Design Professional will retain three copies.

2.2 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
 1. Number of Copies: Submit three copies of each submittal, unless otherwise indicated. Design Professional will not return copies.
 2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
- B. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of Design Professionals and owners, and other information specified.
- C. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.
- D. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- E. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- F. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- G. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- H. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- I. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 01 Section

"Operation and Maintenance Data."

- J. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.
- K. Material Safety Data Sheets (MSDSs): Submit information directly to Owner; do not submit to Design Professional.
 - 1. Design Professional will not review submittals that include MSDSs and will return them for re-submittal.

2.3 DELEGATED DESIGN

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Design Professional.
- B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit copies of a statement, in a count no fewer than that of the shop drawing or other type submittal to which it is in relation, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

All submittals shall be reviewed and approved by the Contractor prior to submittal to the Design professional. Submittals that are not fully and properly reviewed by the Contractor will be returned with no action, and a re-submittal will be required, and attributable delays will not be considered as cause for an extension in Contract Time. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions.

3.2 DESIGN PROFESSIONAL'S ACTION

- A. General: Design Professional will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Design Professional will review each submittal, make marks to indicate corrections or modifications required, and return it. Design Professional will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken.
- C. Informational Submittals: Design Professional will review each submittal and will not return it, or will return it if it does not comply with requirements.
- D. Partial submittals are not acceptable, will be considered non-compliant, and will be returned without review.
 - 1. Should the Contractor proceed with the Work without the required full review of complete submittals, he does so at his sole risk. In any event and at any time it is determined that a missing portion of a submittal is needed in order to ensure compliance with the Contract Documents; the Contractor shall immediately submit the missing portion. No increase in the Contract Amount or the Contract Time will be allowed, nor will any variations from the requirements of the Contract Documents be allowed as a result of the failure on the part of the Contractor to provide complete submittals, or as a result of the failure of the Design Professional to garner complete submittals

from the Contractor.

- E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.
- F. In no case shall any review action or comments on the part of the Design Professional or his Consultants be construed to authorize compensable extra Work or an increase in Contract Amount or Contract Time.

END OF SECTION

SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Warranties.
 - 3. Final cleaning.
- B. See Division 01 Section "Payment Procedures" for requirements for Applications for Payment for Material and Final Completion.
- C. See Division 01 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
- D. See Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
- E. See Divisions 02 through 33 Sections, including but not limited to Section 15 01 60, "Mechanical Work Closeout," for specific closeout and special cleaning requirements for the Work in those Sections.

1.2 MATERIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Material Completion, complete the following. List items below that are incomplete in request.
 - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 - 2. Advise Owner of pending insurance changeover requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 5. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs, damage or settlement surveys, property surveys, and similar final record information.
 - 6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
 - 7. Make final changeover of permanent locks and deliver keys to Owner. Transmit keys with a detailed accounting of the keys transmitted, and garner the receipt signature of an authorized representative of the Owner. Advise Owner's personnel of changeover in security provisions.
 - 8. Complete startup testing of systems.
 - 9. Submit test/adjust/balance records.
 - 10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 - 11. Advise Owner of changeover in heat and other utilities.
 - 12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
 - 13. Complete final cleaning requirements, including touchup painting.
 - 14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- B. Inspection: Submit a written request for inspection for Material Completion. On receipt of this written request, Design Professional will either proceed with inspection or notify Contractor of unfulfilled requirements. Design Professional will prepare the Certificate of Material Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Design

Professional, that must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.3 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
 1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
 2. Submit certified copy of Design Professional's Material Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Design Professional. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 4. Submit pest-control final inspection report and warranty.
 5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training DVDs.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of this written request, Design Professional will either proceed with inspection or notify Contractor of unfulfilled requirements. Design Professional will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
 1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.4 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A.
 1. Organize list of spaces in sequential order, starting with the site, then the building exterior then proceeding to the building interior, from lowest floor to highest floor.
 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

1.5 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Design Professional for designated portions of the Work where commencement of warranties other than date of Material Completion is indicated.
- B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
 4. Provide all warranties available from product and system manufacturers, regardless of whether each warranty is specifically called for in these Specifications.
- B. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Material Completion for entire Project or for a portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
 - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - k. Remove labels that are not permanent.
 - l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
 - m. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - n. Replace parts subject to unusual operating conditions.
 - o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - p. Replace disposable air filters and clean permanent air filters and clean exposed surfaces of diffusers, registers, and grills.
 - q. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
 - r. Leave Project clean and ready for occupancy.

- C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests. Prepare a report.
- D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION

SECTION 01 78 23

OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following per Article 6.4.1; Final Documents, of the Contract.
 - 1. Emergency procedure manuals.
 - 2. Operation manuals for systems, subsystems, and equipment.
 - 3. Maintenance manuals for the care and maintenance of products, materials, and finishes systems and equipment.
- B. See Divisions 02 through 33 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.2 SUBMITTALS

- A. Manual: Submit one copy of each manual in final form at least 15 days before final inspection. Design Professional will return copy with comments within 15 days after final inspection.
 - 1. Correct or modify each manual to comply with Design Professional's comments. Submit 3 copies of each corrected manual within 15 days of receipt of Design Professional's comments.

PART 2 - PRODUCTS

2.1 MANUALS, GENERAL

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain a title page, table of contents, and manual contents.
- B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of Project.
 - 3. Name and address of Owner.
 - 4. Date of submittal.
 - 5. Name, address, and telephone number of Contractor.
 - 6. Name and address of Design Professional.
 - 7. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
 - 1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
 - 2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.

3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
4. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.2 EMERGENCY PROCEDURE MANUALS

- A. Content: Organize manual into a separate section for type of emergency, emergency instructions, and emergency procedures.
- B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component for fire, flood, gas leak, water leak, power failure, water outage, equipment failure, and chemical release or spill.
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- D. Emergency Procedures: Include instructions on stopping, shutdown instructions for each type of emergency, operating instructions for conditions outside normal operating limits, and required sequences for electric or electronic systems.

2.3 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and equipment descriptions, operating standards, operating procedures, operating logs, wiring and control diagrams, and license requirements.
- B. Descriptions: Include the following:
 1. Product name and model number.
 2. Manufacturer's name.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.
 7. Performance curves.
 8. Engineering data and tests.
 9. Complete nomenclature and number of replacement parts.
- C. Operating Procedures: Include start-up, break-in, and control procedures; stopping and normal shutdown instructions; routine, normal, seasonal, and weekend operating instructions; and required sequences for electric or electronic systems.
- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.4 PRODUCT MAINTENANCE MANUAL

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual identified by product name and arranged to

match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

- C. Product Information: Include the following, as applicable:
 - 1. Product name and model number.
 - 2. Manufacturer's name.
 - 3. Color, pattern, and texture.
 - 4. Material and chemical composition.
 - 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and inspection procedures, types of cleaning agents, methods of cleaning, schedule for cleaning and maintenance, and repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

2.5 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including maintenance instructions, drawings and diagrams for maintenance, nomenclature of parts and components, and recommended spare parts for each component part or piece of equipment:
- D. Maintenance Procedures: Include test and inspection instructions, troubleshooting guide, disassembly instructions, and adjusting instructions, and demonstration and training DVD if available, that detail essential maintenance procedures:
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Emergency Procedure Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
- D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
- E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.
 - 1. Do not use original Project Record Documents as part of operation and maintenance manuals.
- F. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION

SECTION 230500
COMMON WORK RESULTS FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Work Included:
 - 1. Submittals
 - 2. Electrical Requirements
 - 3. Painting
 - 4. Cleaning
 - 5. Testing

1.3 SUBMITTALS

- A. The Contractor shall submit for review by the Architect data of materials and equipment to be incorporated in the work. Submittals shall be supported by descriptive material, catalogs, cuts, diagrams, performance curves, and charts published by the manufacturer to show conformance to specification and drawing requirements; model numbers alone will not be acceptable.
- B. Refer to the individual sections for identified equipment and materials for which submittals are required.
- C. Refer to the SHOP DRAWINGS, PRODUCT DATA AND SAMPLES Section for required procedures.
- D. Product Data Preparation: Product submittals shall be made by specification section. All items of a section, requiring submission, shall be submitted together at one time in a tabbed binder. If two or more sections require inter-coordination, (e.g. Air Handling Unit and Vibration Isolation or Air Handling Unit and Condensing Unit) they shall be submitted at the same time. Each individual submittal item within a binder shall be marked to show paragraph number which pertains to the item. Binders for mechanical submittals shall be color coded - Black for HVAC. Binders shall be labeled on outside with project name, contractors name, date of submission, and specification section and number. Binders shall also have a tab indicating submittal number and specification section number. If product submittals for section exceed the capacity of one binder, two or more binders shall be used. In addition to above, a notation cover shall indicate the number of binders for the section and the number of that binder (i.e., 2 of 3). Section binders shall be report cover type with solid cover and 3 metal fasteners or 3-ring type. Report cover binders shall be Duo-Tang Series L2-53558 or approved equal. Electronic submittals shall also be acceptable.
- E. Mechanical Equipment Electrical Data
 - 1. Prior to submitting data for equipment requiring electrical service, the Contractor shall verify that electrical characteristics of equipment submittals comply with electrical service provided for the specified items of equipment.
 - 2. Upon receipt by the Contractor of reviewed submittals for equipment provided under this Division, the Contractor shall coordinate the electrical service requirements, i.e., motor horsepower and full load amps, electrical service characteristics (voltage and phase), and number of services for each item of equipment requiring electrical connections with the electrical drawings and specifications. The Contractor shall furnish to the Architect a complete typewritten list of electrical requirements for each item of equipment to be installed.

- F. Items on or projecting through the ceiling shall be coordinated with other items.
- G. Relocated equipment or existing systems
 - 1. The Contractor and Owner's representative shall inspect all relocated equipment for operation and condition. The results of the inspection shall be typewritten and signed by the Contractor and Owner's representative. Any conditions not noted on this list shall be repaired by the Contractor at no additional cost to the Owner.
 - 2. The Contractor and Owner's representative shall inspect and test all existing water systems to be extended or altered. The results of this inspection and test shall be typewritten and signed by the Contractor and Owner's representative. Any condition not noted on this report shall be repaired by the Contractor at no additional cost to the Owner.
 - 3. The list and report shall be submitted to the Architect for the record.

1.4 QUALITY ASSURANCE

- A. The mechanical equipment and installation shall conform to the following codes:
 - 1. The International Building Code 2012 Edition with Georgia Amendments.
 - 2. The International Mechanical Code 2012 Edition with Georgia Amendments.
 - 3. The International Energy Conservation Code, 2009 Edition with Georgia Amendments.
 - 4. National Electrical Code, 2017 Edition with Georgia Amendments.
- B. The mechanical equipment and installation shall conform to the following standards:
 - 1. Associated Air Balance Council (AABC):
 - a. National Standard for Total System Balance.
 - 2. National Fire Protection Association (NFPA):
 - a. Standard 70, National Electric Code.
 - b. Standard 90A, Installation of Air Conditioning and Ventilating Systems.
 - c. Standard 101, Code for Safety to Life from Fire in Buildings and Structures.
- C. Publication Dates: Where the date of issue of a Reference Standard is not specified, comply with the Standard is effective as of Date of Contract Document.
- D. Permits
 - 1. Obtain all permits and inspections for the installation of this work and pay all charges incident thereto. Deliver to the Owner all certificates of said inspection issued by authorities having jurisdiction.
- E. Workmanship and Materials
 - 1. The workmanship and materials covered by these specifications shall conform to all ordinances and regulations of the city, county and/or other authorities having jurisdiction.

1.5 OPERATION AND MAINTENANCE INSTRUCTIONS

- A. Refer to Division 1 for Detail Requirements.
- B. Printed Material: Provide required printed material for binding in operation and maintenance manuals.
 - 1. Refer to the individual sections for identified equipment for which material is to be provided.
 - 2. The Operations and Maintenance Manual shall include a section for certifications and project warranty data. Refer to individual sections for certifications. Warranties for equipment shall be included in the equipment section of the Operation and Maintenance Manual.
- C. The Manuals shall be a 3 ring binder with tabs for each item listed in specifications. The manuals shall be submitted to the Architect for approval 30 days prior to instruction of Owner personnel. The manual shall include the following items:
 - 1. Parts list
 - 2. Lubrication requirements

3. Preventative maintenance requirements
 4. Name, address, and telephone numbers for supplier of equipment.
- D. Instructions of Owner personnel:
1. Before final inspection, at a time designated by the Architect, provide a competent representative to instruct Owner's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems under this division of the specifications. For equipment requiring seasonal operation, perform instructions for other seasons within six months unless requested otherwise.
 2. Use operation and maintenance manuals as basis of instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
 3. Prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.

1.6 SPARE PARTS

- A. The Contractor shall prepare a typed written list of spare parts or equipment to be turned over to the Owner. The list shall indicate the equipment the parts are for, model numbers and quantity of parts. Refer to individual sections for the spare parts or equipment required by these specifications.

1.7 RECORD DOCUMENTS

- A. Refer to Division 1 for record documents and related submittals.

1.8 CONTRACT DRAWINGS

- A. Drawings are diagrammatic and indicate general arrangement of systems and work. Provide offsets, transitions, and fittings to coordinate the work of each trade with that of other trades, including HVAC, plumbing, fire protection, electrical, structural, and architectural.
- B. Follow drawings in laying out work and check drawings of other disciplines relating to work to verify space conditions. Do not scale drawings.
- C. Equipment layout is based on one manufacturer's product. Where equipment selected by the Contractor for use on the job differs from layout, the Contractor shall be responsible for coordinating space requirements and connection arrangements.

1.9 GUARANTY

- A. The components of the mechanical systems furnished under this division of the Specifications shall be guaranteed for a period of one year from the date of acceptance thereof, either for beneficial use or final acceptance, whichever is earlier, against defective materials, design, and workmanship. Upon receipt of notice from the Architect of failure of any part of the equipment during the guaranty period, the affected part or parts shall be replaced promptly which includes removing the defective part or parts, replacing and installing the new part or parts, at the expense of the Contractor. In addition to the one year guaranty required, each air conditioning compressor shall have an additional four year guaranty on the compressor which shall include parts only.

PART 2 - PRODUCTS

2.1 ELECTRICAL WORK

- A. All electrical equipment furnished under this Division of these Specifications shall comply with the electrical system characteristics indicated on the electrical drawings.

- B. Motors shall be as specified in the MOTORS Section.
- C. Motor control components furnished as an integral part of the mechanical equipment shall conform to requirements of Division 26 - Electrical.
- D. For all motors furnished under this Division of these Specifications for which motor controls are not specified to be integral with the equipment, the controls shall be provided under Division 26 – Electrical.
- E. Power wiring (i.e., feeders to motors, water heaters, and electric heaters and tapes including final connection to equipment) shall be provided under Division 26 - Electrical.
- F. Control wiring (i.e. 120 volt and below) including 120 volt control power to motor operated dampers valves, and variable volume boxes shall be provided under this division unless shown on the electrical drawings. Power wiring (120V) to control panels shall be provided under Division 26. Power (120V) and control (24V) wiring to application-specific controllers and other control system components shall originate at control panels and be provided under this division.

PART 3 - EXECUTION

3.1 PAINTING

- A. Factory painted equipment that has been scratched or marred shall be repainted to match original color.
- B. Steel equipment hangers, threaded rods, bolts, nuts, and supports and uninsulated black steel pipe exposed to sight inside the building which are not provided with a factory applied prime coat shall be cleaned of rust, grease and scale. After cleaning hangers, supports and pipe, a field-applied prime coat shall be provided. In addition, such items in finished spaces shall also be provided with two coats of finish paint in a color to match adjacent surfaces or as noted on the architectural drawings.
- C. Steel equipment hangers and supports, uninsulated black steel pipe, and black steel pipe supports exposed to sight outside the building which are not provided with factory prime coat shall be cleaned of rust, grease and scale. After cleaning hangers, supports and pipe, a field-applied prime coat and two coats of bituminous aluminum paint shall be provided. Insulated pipes outside the building shall be cleaned of rust, grease and scale, and shall be provided with a field-applied prime coat before installing insulation.

3.2 CLEANING AND ADJUSTING

- A. All equipment, pipe, valves, and fittings shall be cleaned of grease, oil, paint spots, metal cuttings, sludge, and construction debris.
- B. Ducts, plenums and casings shall be cleaned of all debris and blown free of all particles of rubbish and dust before installing outlet faces.
- C. Bearings shall be lubricated as recommended by the equipment manufacturer.
- D. Temporary filters shall be provided for fans that are used during construction. Where supply, exhaust, or return fans (whether alone or part of mechanical equipment), are used, all return/exhaust inlets shall be covered with roll filter media. Media shall be taped in place to face of air inlet device or opening. At the time of starting the balancing of the air distribution system, new filters shall be installed.

3.3 TESTING PIPE AND DUCT SYSTEMS

- A. General: Concealed piping and duct work and insulated piping and ductwork shall be tested in place before concealing or covering. Piping and ductwork located underground shall be tested before backfilling. Equipment, materials, and instruments for testing shall be furnished by the Contractor without additional cost to the Owner. System components not rated for the respective test pressure shall be isolated from the system during the test.
- B. Observation: The contractor shall notify the owner's representative 5 days prior to a scheduled test. The owner's representative, at his option, has the right to witness the test.
- C. Air Distribution Systems
1. Ductwork classified and constructed as pressure class 3" W.G. and above shall be tested for leakage. Leakage test shall be as outlined in AABC National Standards for Total System Balance. Test pressure and allowable leakage rate shall be as indicated in the table below. Pressure class and test pressure shall be positive (+) on fan system discharge side and negative (-) on fan system suction side.

TABLE 1

<u>Pressure Class</u>	<u>Test Pressure</u>	<u>Maximum Leakage</u>
a. (3)"	3"wg (750 Pa)	1.0%
b. (4)"	4"wg (1 kPa)	1.0%
c. (6)"	6"wg (1.5 kPa)	1.0%
d. (10)"	10"wg (2.5 kPa)	1.0%

2. Ductwork in pressure classes less than ± 3 " W.G. shall be made airtight prior to covering or concealing to the point that no leakage can be detected by the senses of hearing or feeling at all duct joints and seams.

END OF SECTION

SECTION 230513

COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Work Included
 - 1. Motors (except hermetic refrigeration machine motors) for mechanical equipment.
 - 2. Variable Frequency Drives
- B. Description
 - 1. All motors shall be provided with equipment for which they serve as prime mover.

1.3 SUBMITTALS

- A. General: All submittals shall conform to the requirements of Division 1 - GENERAL REQUIREMENTS and Section 230500 COMMON WORK RESULTS FOR HVAC.
- B. Product Data: Data shall be submitted on the following items:
 - 1. High efficiency motors, including certification of rating and power factor at full, three quarter, and half load.
 - 2. Variable Frequency Drives
- C. Operation and Maintenance Data: Data shall be provided on the following:
 - 1. Variable Frequency Drives

1.4 QUALITY ASSURANCE

- A. Standards
 - 1. Anti-Friction Bearing Manufacturers Association, Inc. (AFBMA):
 - a. Standard 9, Load Ratings and Fatigue Life for Ball Bearings
 - 2. National Electrical Manufacturer's Association (NEMA):
 - a. Publication MG - 1, Motors and Generators
 - 3. The Institute of Electrical and Electronics Engineers, Inc. (IEEE):
 - a. Standard 112, Test Procedure for Polyphase Induction Motors and Generators.
 - 4. American Society of Heating Refrigerating and Air Conditioning Engineers (ASHRAE):
 - a. Standard 90.1 – 1999 Energy Standard for Buildings Except Low Rise Residential Buildings

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Motors received and stored on the job site shall be stored in dry storage spaces, (e.g. building, a storage trailer, or shed). Under no condition shall the units be stored in such a way that metal components are in direct contact with the ground.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Unless indicated otherwise hereinafter or on the drawings, motors shall be 1800 RPM open drip proof (ODP) type.
- B. Motors shall operate within plus or minus 10% of nameplate voltage without reduction of performance or life.
- C. Motors shall have continuous duty classification based on 40 degree C. ambient temperature. Motor service factor shall not be less than 15% unless indicated other wise herein.
- D. Motors shall be sized for the duty to be performed and shall not be operated in the service factor when the driven equipment is operating at specified capacity.
- E. Motors shall comply with NEMA MG – 1-2003, Section I, parts 1, 2, 3, 4, Section II, parts 10, 11, 12, 14.
- F. Motors operating on 120 volt systems shall be rated at 115 volts; motors operating on 208 volt system shall be rated at 200 volts; motors operating on 240 volt system shall be rated at 230 volts; motors operating on 277 volt system shall be rated at 265 volts; motors operating on 480 volt system shall be rated at 460 volts. Motor voltage and phase shall be as indicated on the Electrical drawings.
- G. Motors used with variable frequency drives shall be inverter duty designed to operate with variable frequency drives. Motors shall be approved by the variable frequency drive manufacturer and the motor manufacturer to provide quiet and stable operation over the entire speed range.

2.2 STANDARD MOTORS

- A. Fractional Horsepower Motors
 - 1. Fractional horsepower motors rated 3/4 HP, 1/2 HP, 1/3 HP, or 1/4 HP (550 W, 400 W, 250 W, or 200 W) shall be capacitor start type motors.
 - 2. Drip-proof enclosure motors shall have Class A (50 degrees C temperature rise) insulation, NEMA Service Factor, pre-lubricated sleeve or ball bearings.
 - 3. Enclosed Motors shall have Class A (50 degrees C temperature rise) insulation, 1.0 Service Factor, pre-lubricated ball bearings.
- B. Integral Horsepower Motors
 - 1. Integral horsepower motors, i.e., one horsepower (750 W) and larger, shall be polyphase, squirrel-cage induction motors, NEMA design B, normal starting torque and low starting current unless other operational characteristics are required for the duty to be performed.
 - 2. Integral horsepower motors 25 HP (19 kW) and larger shall be provided with thermal devices embedded in motor windings. Protection shall be static type, sensitive to both over temperature and rate of temperature rise, and shall provide motor protection from overheating due to frequent starting, overload, high ambient temperature, abnormal voltage, ventilation failure, and locked rotor.
 - 3. Bearings shall be grease lubricated anti-friction ball bearings rated for minimum AFBMA 9, L - 10 life of 20,000 hours. Bearing housings shall be equipped with plugged provision for relubrication. Calculate bearing load with NEMA minimum V-belt pulley with belt center line at end of NEMA standard shaft extension. Stamp bearing sizes on nameplate.
 - 4. Insulation shall be NEMA Class B.
 - 5. Sound power levels shall comply with NEMA MG 1.
 - 6. Weatherproof Epoxy treated motors shall have coated windings with rotor and starter surfaces protected with epoxy enamel; bearings shall be double shielded with waterproof non-washing grease.

2.3 EXPLOSION PROOF MOTORS

- A. Motors indicated to be explosion proof shall be as specified above for standard motors. In addition, motors shall be UL approved and labeled for hazardous classification.

2.4 TOTALLY ENCLOSED MOTORS

- A. Motors indicated to be totally enclosed shall be as specified above for standard motors. In addition, motors shall have coated windings and fan cooled enclosure.

2.5 MOTOR EFFICIENCY

- A. Motors shall be standard efficiency unless noted otherwise herein or on the drawings as defined by the Energy Policy Act of 1992. All motors shall be high efficiency.
- B. All general purpose motors shall have nominal full load power factor and efficiency ratings not less than those listed in Table I & II below. Data listed is for 3 phase 230/460 volts NEMA design B, Class B insulation, 40 degree C. ambient, continuous duty motor. Motors of other ratings and characteristics shall conform to their respective efficiency standards for efficiency and power factor.
- C. High efficiency motors nameplate data shall indicate rated efficiency and power factor in addition to standard nameplate data.
- D. Efficiency and power factor shall be tested in accordance with IEEE 112.

Open Drip-Proof (ODP)									
HP (kW)	1200 RPM			1800 RPM			3600 RPM		
	Power Factor %	Standard Eff. %	High Eff. %	Power Factor %	Standard Eff. %	High Eff. %	Power Factor %	Standard Eff. %	High Eff. %
1 (0.75)	72	80	82.5	84	82.5	85.5	85	N/A	77
1.5 (1.1)	73	84	86.5	85	84	86.5	85	82.5	84
2 (1.5)	75	85.5	87.5	85	84	86.5	87	84	85.5
3 (2.3)	60	87.5	88.5	86	86.5	89.5	85	84	85.5
5 (3.8)	65	88.5	89.5	87	87.5	89.5	86	85.5	86.5
7.5 (5.6)	73	90.2	90.2	86	88.5	91	88	87.5	88.5
10 (7.5)	74	90.2	91.7	85	89.5	91.7	86	88.5	89.5
15 (12)	77	91	91.7	85	91	93	89	89.5	90.2
20 (15)	78	91.7	92.4	86	91	93	89	90.2	91
25 (19)	74	92.4	93	85	91.7	93.6	92	91	91.7
30 (22)	78	93	93.6	88	92.4	94.1	91	91	91.7
40 (30)	77	93	94.1	83	93	94.1	92	91.7	92.4
50 (37)	79	93.6	94.1	85	93	94.5	89	92.4	93
60 (45)	82	93.6	94.5	88	93.6	95	91	93	93.6
75 (56)	80	94.1	94.5	88	94.1	95	88	93	93.6
100 (75)	80	94.1	95	83	94.1	95.4	88	93	93.6
125 (94)	84	94.5	95	86	94.5	95.4	91	93.6	94.1
150 (113)	83	94.5	95.4	85	95	95.8	91	93.6	94.1
200 (150)	83	94.5	95.4	85	95	95.8	90	94.5	95

Totally Enclosed Fan-Cooled (TEFC)									
HP	1200 RPM			1800 RPM			3600 RPM		
	Power Factor %	Standard Eff. %	High Eff. %	Power Factor %	Standard Eff. %	High Eff. %	Power Factor %	Standard Eff. %	High Eff. %
1 (0.75)	72	80	82.5		82.5	85.5		75.5	77
1.5 (1.1)	65	85.5	87.5	84	84	86.5	85	82.5	84
2 (1.5)	68	86.5	88.5	85	84	86.5	87	84	85.5
3 (2.3)	63	87.5	89.5	85	87.5	89.5	87	85.5	86.5
5 (3.8)	66	87.5	89.5	83	87.5	89.5	88	87.5	88.5
7.5 (5.6)	68	89.5	91	83	89.5	91.7	86	88.5	89.5
10 (7.5)	75	89.5	91	85	89.5	91.7	86	89.5	90.2
15 (12)	72	90.2	91.7	84	91	92.4	91	90.2	91
20 (15)	76	90.2	91.7	86	91	93	89	90.2	91
25 (19)	71	91.7	93	85	92.4	93.6	92	91	91.7
30 (22)	79	91.7	93	84	92.4	93.6	92	91	91.7
40 (30)	78	93	94.1	86	93	94.1	91	91.7	92.4
50 (37)	81	93	94.1	83	93	94.5	92	92.4	93
60 (45)	83	93.6	94.5	85	93.6	95	93	93	93.6
75 (56)	80	93.6	94.5	87	94.1	95.4	91	93	93.6
100 (75)	83	94.1	95	87	94.5	95.4	92	93.6	94.1
125 (94)	85	94.1	95	87	94.5	95.4	91	94.5	95
150 (113)	85	95	95.8	88	95	95.8	91	94.5	95
200 (150)	81	95	95.8	87	95	96.2	87	95	95.4

2.6 Variable Frequency Drives

- A. Description: NEMA ICS 2, IGBT, PWM, VFC; listed and labeled as a complete unit and arranged to provide variable speed of an NEMA MG 1, Design B, 3-phase induction motor by adjusting output voltage and frequency.
- B. Output Rating: 3-phase; 6 to 60 Hz, with voltage proportional to frequency throughout voltage range 66 Hz, with torque constant as speed changes.
- C. Unit Operating Requirements:
 1. Input ac voltage tolerance of 380 to 500 V, plus or minus 10 percent.
 2. Input frequency tolerance of 50/60 Hz, plus or minus 6 percent.
 3. Minimum Efficiency: 96 percent at 60 Hz, full load.
 4. Minimum Displacement Primary-Side Power Factor: 96 percent.
 5. Overload Capability: 1.1 times the base load current for 60 seconds; 2.0 times the base load current for 3 seconds.
 6. Starting Torque: 100 percent of rated torque or as indicated.
 7. Speed Regulation: Plus or minus 1 percent.
- D. Isolated control interface to allow controller to follow control signal over an 11:1 speed range.
- E. Internal Adjustability Capabilities:
 1. Minimum Speed: 5 to 25 percent of maximum rpm.
 2. Maximum Speed: 80 to 100 percent of maximum rpm.
 3. Acceleration: 2 to a minimum of 22 seconds.
 4. Deceleration: 2 to a minimum of 22 seconds.
 5. Current Limit: 50 to a minimum of 110 percent of maximum rating.
- F. Self-Protection and Reliability Features:
 1. Retain one or more of first nine subparagraphs below.

2. Input transient protection by means of surge suppressors.
 3. Undervoltage and overvoltage trips; inverter overtemperature, overload, and overcurrent trips.
 4. Adjustable motor overload relays capable of NEMA ICS 2 performance.
 5. Notch filter to prevent operation of the controller-motor-load combination at a natural frequency of the combination.
 6. Instantaneous line-to-line and line-to-ground overcurrent trips.
 7. Loss-of-phase protection.
 8. Reverse-phase protection.
 9. Short-circuit protection.
 10. Motor overtemperature fault.
- G. Enclosures shall be NEMA 1 for indoor locations and NEMA 4X for outdoor locations.
- H. Automatic Reset/Restart: Attempts three restarts after controller fault or on return of power after an interruption and before shutting down for manual reset or fault correction. Bidirectional autospeed search shall be capable of starting into rotating loads spinning in either direction and returning motor to set speed in proper direction, without damage to controller, motor, or load.
- I. Power-Interruption Protection: To prevent motor from re-energizing after a power interruption until motor has stopped.
- J. Torque Boost: Automatically varies starting and continuous torque to at least 1.5 times the minimum torque to ensure high-starting torque and increased torque at slow speeds.
- K. Motor Temperature Compensation at Slow Speeds: Adjustable current fall-back based on output frequency for temperature protection of self-cooled, fan-ventilated motors at slow speeds.
- L. Door-mounted LED status lights shall indicate the following conditions:
1. Power on.
 2. Run.
 3. Overvoltage.
 4. Line fault.
 5. Overcurrent.
 6. External fault.
- M. Panel-Mounted Operator Station: Start-stop and auto-manual selector switches with manual-speed-control potentiometer and elapsed time meter.
- N. Meters or digital readout devices and selector switch, mounted flush in controller door and connected to indicate the following controller parameters:
1. Output frequency (Hertz).
 2. Motor speed (rpm).
 3. Motor status (running, stop, fault).
 4. Motor current (amperes).
 5. Motor torque (percent).
 6. Fault or alarming status (code).
 7. Proportional-integral-derivative (PID) feedback signal (percent).
 8. DC-link voltage (volts direct current).
 9. Set-point frequency (Hertz).
 10. Motor output voltage (volts).
- O. Control Signal Interface:
1. Electric Input Signal Interface: A minimum of 2 analog inputs (0 to 10 V or 0/4-20 mA) and 6 programmable digital inputs.
 2. Remote signal inputs capable of accepting any of the following speed-setting input signals from the control system:
 - a. 0 to 10-V dc.

- b. 0-20 or 4-20 mA.
 - c. Potentiometer using up/down digital inputs.
 - d. Fixed frequencies using digital inputs.
 - e. RS485.
 - f. Keypad display for local hand operation.
- 3. Output signal interface with a minimum of 1 analog output signal (0/4-20 mA), which can be programmed to any of the following:
 - a. Output frequency (Hertz).
 - b. Output current (load).
 - c. DC-link voltage (volts direct current).
 - d. Motor torque (percent).
 - e. Motor speed (rpm).
 - f. Set-point frequency (Hertz).
- 4. Remote indication interface with a minimum of 2 dry circuit relay outputs (120-V ac, 1 A) for remote indication of the following:
 - a. Motor running.
 - b. Set-point speed reached.
 - c. Fault and warning indication (overtemperature or overcurrent).
 - d. High- or low-speed limits reached.
- P. Communications: RS485 interface allows VFC to be used with an external system within a multidrop LAN configuration. Interface shall allow all parameter settings of VFC to be programmed via BMS control. Provide capability for VFC to retain these settings within the nonvolatile memory.
- Q. Coordinate both subparagraphs below with manufacturers selected; not all manufacturers offer all optional features below.
- R. Integral Disconnecting Means: NEMA AB 1, instantaneous-trip circuit breaker with lockable handle.
- S. Accessories:
 - 1. Devices shall be factory installed in controller enclosure unless otherwise indicated.
 - 2. Push-Button Stations, Pilot Lights, and Selector Switches: NEMA ICS 2, heavy-duty type.
 - 3. Standard Displays:
 - a. Output frequency (Hertz).
 - b. Set-point frequency (Hertz).
 - c. Motor current (amperes).
 - d. DC-link voltage (volts direct current).
 - e. Motor torque (percent).
 - f. Motor speed (rpm).
 - g. Motor output voltage (volts).

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Motors shall be installed and aligned with equipment for which they serve as prime mover.
- B. Motors located indoors shall be open drip proof unless indicated otherwise hereinafter.
- C. Motors located outdoors shall be weatherproof type unless indicated otherwise hereinafter.
- D. Motors located in wet airstreams shall be totally enclosed epoxy treated type.

END OF SECTION

SECTION 230553

IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Work Included:
 - 1. Equipment Labels

1.3 SUBMITTALS

- A. General: All submittals shall comply with the requirements of Division 1 - GENERAL REQUIREMENTS, and Section 230500 COMMON WORK RESULTS FOR HVAC.
- B. Product Data: Data shall be submitted on the following items:
 - 1. Equipment Labels

1.4 QUALITY ASSURANCE

- A. Standards
 - 1. American National Standards Institute (ANSI):
 - a. Standard A13.1, The Scheme for Identification of Piping Systems.
 - 2. National Fire Protection Association (NFPA)
 - a. Standard 45, Fire Protection for Laboratories Using Chemicals.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Tapes, labels, paint received and stored on the job site shall be stored in dry storage spaces, (e.g. building, a storage trailer, or shed). Under no condition shall the units be stored in such a way that metal components are in direct contact with the ground.
- B. Tapes, labels, paint shall be covered with 6 mil (.4mm) polyethylene sheet (taped in place) to protect the equipment from damage and the weather.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Pipe identification shall comply with ANSI A13.1.

2.2 EQUIPMENT LABELS

- A. Equipment identification labels shall be black plastic laminate with white letters. Labels shall be 2" high with ½" minimum letters. Equipment terminology shall be same as shown on equipment schedules, (i.e. AUH-1, CH-1, etc.).

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Equipment labels shall be attached to equipment using self tapping stainless steel screws or contact-type permanent adhesive.

END OF SECTION

SECTION 230593

TESTING, ADJUSTING AND BALANCING FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Work Included
 - 1. Performance Testing
 - 2. Balancing
- B. Description
 - 1. The Contractor shall obtain the services of an independent test and balance agency who shall performance test and balance the following systems:
 - a. All air distribution (i.e., supply, return, exhaust)

1.3 SUBMITTALS

- A. General: All submittals shall comply with the requirements of Division 1 - GENERAL REQUIREMENTS and Section 230500 COMMON WORK RESULTS FOR HVAC.
- B. Product Data: Data shall be submitted on the following:
 - 1. Balance procedure
 - 2. Balance forms
- C. Certificates: Certificates shall be submitted on the following:
 - 1. Test equipment calibration including date of last calibration.
 - 2. Certificate of membership in AABC or NEBB.
- D. Reports: Reports shall be submitted on the following:
- E. Field balance report.

1.4 QUALITY ASSURANCE

- A. Standards
 - 1. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE):
 - a. Fundamentals.
 - 2. Associated Air Balance Council (AABC):
 - a. National Standards for Field Measurements and Instrumentation, Total System Balance, Air Distribution - Hydronic Systems - Air Pollution - Sound Vibration.
 - 3. National Environmental Balancing Bureau (NEBB):
 - a. Procedural Standards for Testing - Balancing - Adjusting of Environmental Systems.
- B. Qualification of Testers:
 - 1. The balancing personnel shall be familiar with and perform the balancing in accordance with AABC MN-1-1989 or NEBB-1998 procedures using forms of appropriate organization.
 - 2. The balancing firm shall be a certified member of AABC or NEBB.
 - 3. The independent test and balance company shall have a minimum of five years experience as an independent test and balance company.

PART 2 - PRODUCTS

2.1 EQUIPMENT

- A. Instruments used for balancing shall have been calibrated within 6 months prior to the balancing of the systems.
- B. All instruments required to balance the system shall be provided at the Contractor's expense.

PART 3 - EXECUTION

3.1 GENERAL BALANCING

- A. Air
 - 1. Adjust and balance air systems indicated hereinbefore to obtain design flow rates for systems as a whole and for each inlet and outlet. Use balancing dampers and/or flow setting devices for inlet, outlet and branch adjustments. Use fan speed adjustment for belt drive fans. When balancing air devices in rooms, doors to room shall be closed.
 - 2. Pitot tube traverses shall be performed in accordance with ASHRAE Fundamentals.
- B. Final readings shall be set with -5% to +10% of design conditions.

3.2 REPORT

- A. The report of performance testing and balancing shall include data listed below:
 - 1. Name and address of project, name and address of Contractor, dates of all tests, name and telephone number of test engineer.
 - 2. Grilles, registers and diffusers:
 - a. Fan System and/or zone number.
 - b. Room number.
 - c. Size of inlet or outlet.
 - d. Manufacturer's effective data.
 - e. Required flow and velocity.
 - f. Initial flow and velocity.
 - g. Final flow and velocity.
 - 3. Fans (including fans which are part of air conditioning equipment):
 - a. System and/or fan number.
 - b. Fan manufacturer, serial number and model number.
 - c. Motor manufacturer, horsepower, voltage, phase, RPM, type and service factor, amperage nameplate rating.
 - d. Scheduled data on drawings or in specifications.
 - e. Final air flow.
 - f. Final RPM.
 - g. Final total static pressure.
 - h. Final suction static pressure.
 - i. Final motor amperage.
 - j. Final brake horsepower.
 - 4. Fan Powered Boxes:
 - a. Box designation and location.
 - b. Scheduled data on drawings and/or in specifications.
 - c. Initial air flow (cooling).
 - d. Final air flow (cooling).
 - e. Initial air flow (heating).
 - f. Final air flow (heating).
 - g. Coil data shall be as indicated for coils.

- B. Any deviations from design data shall be explained in the report - possible reasons for and solutions to.
- C. Report shall be signed and dated by balance engineer.
- D. Test and balance shall not be performed until system installation is complete.
- E. Permanently mark the settings of all valves, dampers and other adjustment devices in a manner that will allow the settings to be restored. If a balancing device is provided with a memory stop, it shall be set and locked

END OF SECTION

SECTION 230993

SEQUENCE OF OPERATIONS FOR HVAC CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Work Included
 - 1. Heating and Air conditioning controls.

1.3 SUBMITTALS

- A. General: All submittals shall comply with the requirements of Division 1 - GENERAL REQUIREMENTS and Section 230500 COMMON WORK RESULTS FOR HVAC .
- B. Sequence Data: Data shall be submitted with control diagrams in Section 230900 INSTRUMENTATION AND CONTROL FOR HVAC.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 VARIABLE VOLUME AIR HANDLING UNITS

- A. Air Handling Unit (RTU-2)
 - 1. Unit shall be energized continuously.
 - 2. Unit shall be controlled through:
 - a. Building Management System
 - 3. Under normal operation, a signal from BMS shall energize the fan. With fan energized:
 - a. Minimum outside air damper shall open.
 - b. When the airflow is modulated down to the manufacturer's minimum recommended setting, the supply air temperature set point shall be increased in 1°F increments to prevent the airflow quantity from dropping below this minimum flow rate. The condenser shall modulate to maintain set condition.
 - c. On a rise in static pressure over set point an alarm shall be initiated. On a further rise in static pressure to 1 inch over set point the RTU shall shut down and the outside air dampers shall close. Manual reset at the unit shall be required to restart the fan motor.
 - d. On a rise in supply air temperature above 53 °F set point (adj.), the cooling cycle shall stage to maintain set condition.
 - e. Upon a drop in supply air temperature below 51°F, the electric heat shall modulate the SCR controls to maintain set condition. The heat shall also be energized when the return air temperature falls below 68°F (adj.). The discharge air set point shall begin to reset upwards by a reset ratio of 2°F for every 1°F that the return air temperature falls below the reset enable point. Maximum reset shall be limited at 9°F.
 - f. On a change in supply air static pressure, as measured by a sensor located 95% of the distance downstream of the RTU, the fan speed shall modulate to maintain the set static pressure.
 - g. Outside air reset based on CO2 monitor:

When not overridden by economizer or mixed air control, a carbon dioxide sensor mounted in the return air duct and a sensor in the outside air duct shall modulate the minimum outside air damper from the fully open position balanced to achieve the scheduled outside air flow rate down to the flow rate required to maintain a 700 PPM differential between the return air and outside airstreams in order to maintain the carbon dioxide concentration in the return air stream at the 1000 PPM maximum level desired by ASHRAE Standard 62.

4. Under economizer operation:
 - a. With return air enthalpy higher than outside air enthalpy, no zone calling for heating, and outside air temperature above cooling set condition.
 - 1) The maximum outside air damper shall open 100%.
 - 2) The return air damper shall close 100%.
 - 3) The relief air damper shall open 100%.
 - 4) The condensing unit shall stage to maintain set coil leaving condition.
5. Under alarm operation, a signal from the fire alarm system or activation of the air smoke detectors shall:
 - a. De-energize the fan.
 - b. Close the minimum outside air damper.
 - c. Close the maximum outside air damper.
 - d. Close the return air damper.

END OF SECTION

SECTION 233113

METAL DUCTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Work Included:
 - 1. Ductwork

1.3 SUBMITTALS

- A. General: All submittals shall comply with the requirements of Division 1 - GENERAL REQUIREMENTS and Section 230500 COMMON WORK RESULTS FOR HVAC.
- B. Product Data: Data shall be submitted on the following items:
 - 1. Ductwork including coordinated layout drawings indicating locations of equipment of all other trades above ceilings as well as ductwork.

1.4 QUALITY ASSURANCE

- A. Standards
 - 1. American Society for Testing and Materials (ASTM):
 - a. Standard E84, Surface Burning Characteristics of Building Materials.
 - 2. National Fire Protection Association (NFPA):
 - a. Standard 90A, Installation of Air Conditioning and Ventilating Systems.
 - b. Standard 90B, Installation of Warm Air Heating and Air Conditioning Systems.
 - c. Standard 255, Test Methods, Surface Burning Characteristics of Building Materials.
 - 3. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
 - a. HVAC Duct Construction Standards, Metal and Flexible.
 - b. Duct Cleanliness for New Construction Guidelines
 - 4. Underwriter's Laboratories (UL):
 - a. Standard 181, Factory-Made Air Duct Materials and Duct Connectors.
 - 5. American Conference of Governmental Industrial Hygienists
 - a. Industrial Ventilation, 24th Edition, 2001, a Manual of Recommended Practice.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Air distribution system components received and stored on the job site shall be stored in dry storage spaces, (e.g. building, trailer, or shed) whenever possible. Air distribution system components shall be stored on wooden rails or wooden pallets. Under no condition shall the air distribution system components be stored in such a way that metal components are in direct contact with the ground or floor slabs.
- B. Where it is not practical to store items within an enclosure air distribution system components may be stored on wooden rails, wooden pallets, or shipping skids outside.
- C. Air distribution system components shall be covered with 6 mil polyethylene sheet (taped in place) to protect the equipment from damage and the weather.

PART 2 - PRODUCTS

2.1 DUCTWORK

A. General

1. Ductwork shall be constructed of lock forming quality galvanized steel sheets.
2. Galvanized coating shall be not less than 1.25 ounces total for both sides per square foot (301 g. per square meter) of sheet metal.
3. Ductwork shall be square, rectangular, round, or flat oval, as indicated on the drawings.
4. Turning vanes shall be installed in all 90 degree square and rectangular elbows and at other locations shown on the drawings. In any supply, return or exhaust air ductwork with velocities of 1800 FPM (9 m/s) or higher, the turning vanes shall be the double thickness type, with vanes welded to the runners and runners welded to the duct.
5. Ductwork shall be classified and constructed in the following SMACNA pressure classes, or 150% of the scheduled fan S.P., whichever is greater:

System or Zone	Pressure Class
a. Supply air ductwork from air handling unit to variable air volume boxes or fan powered boxes.	+ 3
b. Return air ductwork	- 2

B. Galvanized Steel Ductwork

1. Except where indicated otherwise, herein or on the drawings, duct construction shall conform to the recommendations of the SMACNA HVAC Duct Construction Manual for pressure classes specified hereinbefore.
2. All galvanized areas damaged by welding shall be coated with rust inhibitive aluminum paint.
3. Round and flat oval ductwork shall be spiral lock-seam construction, except as follows:
 - a. Concealed round duct up to 12" (300mm) in diameter in pressure class 2" shall be longitudinal seam construction.
 - b. Round ducts 61" (25mm) and larger in diameter shall be longitudinal seam construction with fusion welded butt seams. Sections supplied in lengths greater than four feet shall have angle iron rings welded to the duct on four foot centers (maximum). Welding of the angle ring to duct shall apply not less than one inch of weld for each foot of angle ring.
4. Round and flat oval fittings shall be fusion welded butt seam type with all welds continuous along seams. All divided flow fittings shall be manufactured as separate fittings - tap collars welded into spiral duct sections will not be permitted. All divided flow fittings 12" (300mm) and smaller shall have radiused entrance produced by machine or press forming; all divided flow fittings 14"(355mm) and larger shall have conical entrance produced by machine or press forming. All divided flow entrances shall be free of weld build-up, burrs, and irregularities. Fittings shall be the same manufacturer as ductwork.
5. Duct sealant shall be a U.L. listed synthetic latex base mastic or mineral impregnated woven fiber tape with adhesive. Duct sealing compounds shall be low VOC type with a maximum VOC emission of 250 grams per liter
 - a. Sealant shall have fire hazard classification per ASTM E84 of flame spread-5 and smoke development-0. Sealant shall be:
 - 1) Kingco
 - 2) United McGill
 - b. Fiber tape and adhesive shall be:
 - 1) Uni-cast
 - 2) United McGill
 - c. Tape width in inches, shall be:
 - 1) Duct Diameter, 0 to 10 Inches: 2.

- 2) Duct Diameter, 11 to 20: 3.
- 3) Duct Diameter, 22 and Larger: 4.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Galvanized Steel Ductwork

1. Ductwork shall be installed in accordance with recommendations of SMACNA HVAC Duct Construction Standards Manual.
2. Duct-to-duct joints in round duct up to and including 60" (1500mm) in diameter and in equivalent size flat oval ducts shall be made by using sleeve couplings, reinforced by rolled beads. Duct-to-fitting joints in round duct up to and including 60" (1500mm) in diameter and in equivalent size flat oval ducts shall be made by slip-fit of the projecting collar on the fitting into the duct. Sleeve shall be the same gauge galvanized steel as the duct; insertion length of sleeve coupling and fitting collar shall be not less than 2" (50mm). After the joint is slipped together, sheet metal screws shall be installed for mechanical strength; screws shall be equally spaced, no more than 12" (300mm) on centers and with a minimum of 3 screws in each joint. Screws shall be placed at 1/2" (12mm) from the joint bead. Duct-to-duct joints in ducts up to and including 12" (300mm) in diameter for pressure class 2" (50mm) and below may be the beaded-crimp type and each joint shall be fastened with sheet metal screws, equally spaced, not more than 12" (300mm) on centers and with a minimum of 3 screws in each joint. The beaded-crimp joint shall provide at least a 1" (25mm) lap to accommodate the sheet metal screws.
3. Duct-to-duct and duct-to-fitting joints in round ducts larger than 60"(1500mm) in diameter, and in equivalent size flat oval ducts, shall be the loose flange type. The ends of ducts and fittings shall have 5/8"(16mm) flanges to form a gasketing surface for sealing. Bolting flanges shall be 2" x 2" x 3/16" (50mm x 50mm x 5mm) ring type steel angles attached to the duct and fitting by continuous weld; bolt spacing on flanges shall not exceed 6" (150mm) on centers. Flanged joints shall be sealed with neoprene rubber gaskets.
4. All duct joints (longitudinal, transverse) and duct penetrations shall be sealed using methods outlined in SMACNA HVAC Air Duct Leakage Test Manual.

B. DUCT SUPPORT SPACING

C. Duct hangers and supports shall be in accordance with SMACNA HVAC Duct Construction Standards except:

1. Hangers shall be spaced not over 8'-0" (2400mm) on centers.
2. For rectangular ducts; with longest dimensions up through 60" (1500mm), hangers shall be the galvanized steel strap type; with longest dimension 61" (1525mm) and larger, hangers shall be trapeze type constructed of galvanized steel angles with round hanger rods. Sizes for strap hangers and trapeze angles and rods shall be based on duct size as scheduled in the SMACNA HVAC Duct Construction Standard.
3. For round ducts, hangers shall be galvanized steel strap hangers. Sizes and number for strap hangers shall be based on duct size as scheduled in the SMACNA HVAC Duct Construction Standard.

END OF SECTION

SECTION 236200

PACKAGED COMPRESSOR AND CONDENSER UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Work Included:
 - 1. Rooftop Units
 - 2. Roof Curbs

1.3 SUBMITTALS

- A. General: All submittals shall comply with the requirements of Division 1 - GENERAL REQUIREMENTS and Section 230500 COMMON WORK RESULTS FOR HVAC.
- B. Product and Performance Data: Data shall be submitted on the following items:
 - 1. Rooftop Units
 - 2. Roof Curb Adapter
- C. Operations and Maintenance Data: Data shall be submitted for the following items:
 - 1. Rooftop Units

1.4 QUALITY ASSURANCE

- A. Standards:
 - 1. Air Conditioning Refrigeration Institute (ARI):
 - a. Standard 360, Unitary Air Conditioning Equipment
 - b. Standard 370, Sound Rating of large outdoor refrigerating and air conditioning equipment.
 - c. Standard 410, Forced Circulation Air-Cooling and Air-Heating Coils.
 - 2. Underwriter's Laboratories (UL):

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Rooftop Units received and stored on the job site shall be stored in dry storage spaces, (e.g. building, trailer, or shed) whenever possible. Rooftop Units shall be stored on wooden rails, wooden pallets, or shipping skids. Under no condition shall the rooftop units be stored in such a way that metal components are in direct contact with the ground or floor slabs.
- B. Where it is not practical to store items within an enclosure, rooftop units may be stored on wooden rails, wooden pallets, or shipping skids outside.
- C. Rooftop Units shall be covered with 6-mil polyethylene sheet (taped in place) to protect the equipment from damage and the weather.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Units shall be packaged, air-cooled, DX-type with weather tight casing specifically designed for outdoor rooftop installation on roof curb with down flow configuration. Units shall be complete assemblies of fans, coils, compressors, air cooled condenser, controls, casings, filters and all accessories as required to achieve performance ratings and control sequences described below. Units shall be variable volume type as indicated on the drawings. Cooling capacity shall be rated in accordance with ARI Standard 360. Units shall be provided with 0-100% economizers and 100% exhaust fans.
- B. Units shall be single piece construction as manufactured at the factory. Units shall be constructed for installation on a roof curb providing, as a minimum, full perimeter support under air handler section and pedestal support under condenser section.
- C. Units shall be factory run tested to include the operation of all fans, compressors, heat exchangers, and control sequences.

2.2 UNIT CASING

- A. Cabinet shall be galvanized steel, phosphatized, and finished with a painted coating capable to withstand 1000 consecutive-hour salt spray application in accordance with standard ASTM B 117. Structural members shall be 14 gauge (1.99 mm) with access doors and removable panels of minimum 18-gauge (1.31 mm) steel. Roof panels shall be sloped to provide positive drainage of rainwater away from the cabinet.
- B. Exterior casing color shall be manufacturer's standard.
- C. Access Doors shall be fully gasketed hinged doors with fluted knob fasteners and chained "tie-backs" to provide access to filters, heating section, return/exhaust air fan section, supply air fan section and evaporator coil section.
- D. The unit control panel section shall be compartmented to separate high and low voltage components. The control panel shall be fully gasketed, hinged and provided with quick release latches for easy access. The high voltage control panel shall be provided with a door handle disconnect switch.
- E. Unit shall be double wall.
- F. Provide a minimum of 1/2-inch (13 mm) thick-coated fiberglass internal liner on all exterior panels in contact with the conditioned air stream.
- G. VAV units shall be provided with supply fan sound attenuator which shall provide a minimum five (5) dynamic insertion loss (DIL) in the frequency rang between 125 Hz and 500 Hz.

2.3 AIR FILTERS

- A. Air Filters: Filters shall mount integral within unit casing and be accessible through hinged access panels.
- B. Filters shall be 2" MERV 8 pleated filters.

2.4 SUPPLY FANS

- A. Supply and exhaust fans shall be forward curved with fixed-pitch sheave drive assemblies. Dynamically balance all fans and the unit's running fan assembly (fan mounted on actual shaft, bearings and in scroll housing) to assure smooth operation of the fan and it's associated assembly.

- B. Mount fan motors and fan on a common base assembly and isolated from unit with two (2") inch (50 mm) deflection spring type isolators. Provide thrust restraint isolation on the fan housing/fan board to assure smooth fan startup transition and operation.
- C. Fan shaft shall be mounted on grease-lubricated ball bearings.
- D. Motor shall be open drip-proof, high efficient type suitable for operation with VFD.

2.5 ELECTRIC HEATING SECTION

- A. Provide completely assembled and wired electric heat system that contains heavy-duty nickel chromium heating elements internally wired for maximum of 40 watts per square inch. Furnish with automatic reset high limit cutout, contactors, and galvanized steel frame. Provide factory-mounted non-fused disconnect switch and SCR controls.

2.6 EVAPORATOR COIL SECTION

- A. Coils shall be 4-row deep (minimum) DX-type with aluminum fins mechanically bonded to copper tubes. Coils shall be inter-circuited to maintain active coil face area at part load conditions.
- B. Provide a thermostatic expansion valve (TXV) for each refrigerant circuit. Factory pressure and leak test coil at 300 psi (2068 kPa).
- C. Provide pitched stainless steel drain pan under evaporator coil.

2.7 CONDENSER SECTION

- A. Coils shall be aluminum fins mechanically bonded to copper tubes. Factory leak test coil under 450-psi pressure. Coil fin spacing shall not exceed 14 per inch.
- B. Coils shall have a protective coating. E-coated aluminum microchannel coils shall have a flexible epoxy polymer coating uniformly applied to all coil external surface areas without material bridging between fins or louvers. Coating process shall ensure complete coil encapsulation, including all exposed fin edges. E-coat thickness of 0.8 to 1.2 mil with top coat having a uniform dry thickness from 1.0 to 2.0 mil on all external coil surface areas, including fin edges, shall be provided. E-coated coils shall have superior hardness characteristics of 2H per ASTM D3363-00 and cross-hatch adhesion of 4B-5B per ASTM D3359-02. E-coated coils shall have superior impact resistance with no cracking, chipping, or peeling per NSF/ANSI 51-2002 Method 10.2.
- C. Provide sub cooling circuit(s) integral with condenser coils to maximize efficiency and prevent premature flashing of liquid refrigerant, to a gaseous state, ahead of the expansion valve.
- D. Provide vertical discharge, direct drive fans with steel blades, and three phase motors. Fans shall be statically and dynamically balanced. Motors shall be permanently lubricated, with built-in current and thermal overload protection in weather tight slingers over motor bearings.
- E. Unit shall be provided with factory-installed electronic low ambient control to allow for operation down to 0 degrees F (-18 C).
- F. Provide factory-installed 20-gauge (1.0 mm) galvanized steel louvered coil guards around perimeter of condensing section.

2.8 REFRIGERATION SYSTEM

- A. Compressors shall be industrial grade, direct drive 3600 RPM maximum speed reciprocating or scroll type. The motor shall be of a suction gas cooled hermetic design. Compressor shall have centrifugal oil pump with dirt separator, oil sight glass, and oil charging valve. If semi-hermetic reciprocating industrial grade compressors are utilized provide single piece crankshafts, connecting rods aluminum pistons, rings to prevent gas leakage, high strength non-flexing ring type suction and discharge valves, spring loaded heads, replaceable cylinder liners, and sealing service immersed in oil. Provide removable discharge heads and hand hold covers, and discharge service valves. Provide compressor with automatic capacity reduction equipment consisting of suction valve unloaders. Use electric solenoid actuated lifting mechanism operated by oil pressure. Provide for unloaded compressor start.
- B. Provide thermostatic motor winding temperature control to protect against excessive motor temperatures resulting from over-/under-voltage or loss of charge. Provide high and low pressure cutouts, and reset relay.
- C. Provide factory-installed compressor lockout thermostat to prevent compressor operation at low ambient conditions.
- D. On VAV units, provide coil frost protection for the compressor when operating at minimum load. This device shall be factory installed hot gas by-pass on each refrigerant circuit or temperature control system that senses suction temperature to prevent coil frosting.

2.9 OUTDOOR AIR SECTION

- A. Unit shall be provided with 100% modulating enthalpy-based economizer system fully integrated with unit return and exhaust air dampers. Unit operation is through primary temperature controls that automatically modulate dampers to maintain desired space temperature conditions.
- B. Unit shall be provided with automatic outdoor enthalpy lockout sensor, adjustable minimum position control and normally closed spring-return motor for outside air damper closure during unit shutdown or power interruption.
- C. Minimum outside airflow shall be monitored and maintained at a constant amount regardless of supply and fan speed.

2.10 DAMPERS

- A. Dampers shall be of low leak type with stainless steel end seals and vinyl gasketed edges. Leakage rate shall not to exceed 2.5% of nominal airflow at one-inch W.C. (0.25 kPa) static pressure as determined in accordance with AMCA Standard 575.

2.11 DDC MICROPROCESSOR CONTROLS

- A. Each unit shall be provided with a factory-installed, programmed and run-tested, stand-alone, microprocessor based DDC control system suitable for constant or variable volume control as indicated. This system shall consist of temperature and pressure (thermistor and transducer) sensors, printed circuit boards, and a unit-mounted control panel with LCD digital readout. The microprocessor shall be equipped with on-board diagnostics to indicate that all hardware, software, and all interconnected wiring and sensors are in proper operating condition. The microprocessor's memory shall be non-volatile EEPROM type, requiring no battery or capacitive backup to maintain all data during a power loss.
- B. Unit DDC controls shall be compatible with building DDC controls to the extent that input and output points accessed at unit control panel may be accessed by a remote terminal on or off-site.

- C. The digital readout control panel shall be readily accessible for service diagnosis and programming without having to open the main control panel on the rooftop unit. Alphanumeric coded displays shall not be acceptable. The digital control panel - shall be a 16 key touch-sensitive membrane key switch panel, password protected. The digital readout control panel display shall consist of a 2 line by 40 characters per line clear English display.
- D. Anti-recycle Protection - shall be provided to prevent excessive cycling, and premature wear, of the compressors, contactors and related components.
- E. A building automation interface shall be provided to allow interface with the BAS system. This interface shall provide a minimum of (5) binary outputs and accept a minimum of (4) analog inputs. The module shall provide 2-step demand limiting upon a contact closure from an external signaling source.
- F. Airflow modulation shall be provided by a variable frequency inverter that is factory-mounted and functionally tested. Adjustable frequency inverter drive shall safely vary the speed of the fan motor allowing the motor to meet the dynamic requirements at the shaft of the motor meeting system static. Inverter frequency drive shall match the fan motor according to the motor's FLA rating. Inverter controller shall have a display that provides readout functions that include: output frequency, output voltage, output current, output power, DC bus voltage, interface terminal status, and fault status. Inverter shall be provided with an internal temperature speed limiting function to prevent an internal high temperature lockout on a high ambient start. Manufacturer shall demonstrate this feature in the unit submittal.
- G. See Section 230993 for Sequence of Operation.

2.12 MISCELLANEOUS FEATURES

- A. Unit shall require only one electrical connection. Unit power wiring shall include one 15-amp GFI convenience outlet. Wiring and electrical components shall be installed in accordance with Division 26, ELECTRICAL.
- B. Set Point: Provide potentiometer for VAV units to allow for remote setting of the discharge air set point.
- C. Low compressor sound blanket shall be provided for field installation.
- D. Indoor air quality CO2 sensor to provide demand control ventilation located in return.
- E. Suction and Liquid Service Valves: Shall be equipped with ball type service valves in the suction and liquid line for each circuit.
- F. Discharge Service Valve: Shall be equipped with a ball type service valve in the discharge line of each circuit.
- G. Replaceable Core Filter Drier: Shall be equipped with a replaceable core filter drier in each liquid line.

2.13 ROOF CURB

- A. Provide factory supplied roof curb adapter as needed for new unit dimensions. Field verify size of existing curb. Curb adapter shall be provided with duct transitions.

2.14 PACKAGED ROOFTOP UNITS

- A. Packaged Rooftop Units shall be:

Carrier; 50 Series.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that roof is ready to receive work and opening dimensions are as indicated on shop drawings.
- B. Verify that proper power supply is available.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Mount units on factory built roof-mounting frame providing watertight enclosure to protect ductwork. Install roof mounting curb level.

3.3 MANUFACTURER'S FIELD SERVICES

- A. Manufacturer shall furnish a factory trained service engineer without additional charge to start the unit(s). Package rooftop unitary manufacturers shall maintain service capabilities no more than 100 miles (161 km) from the jobsite.

END OF SECTION